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MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—PREFATORY WORDS.

THE first English journal devoted to Psychology and Philosophy, MIND appears in circumstances that call for some remark.

That no such journal should hitherto have existed is hardly surprising. Long as English inquiry has been turned on the things of mind, it has, till quite lately, been distinguished from the philosophical thought of other countries by what may be called its unprofessional character. Except in Scotland (and even there Hume was not a professor) few British thinkers have been public teachers with philosophy for the business of their lives. Bacon, Hobbes, Locke, Berkeley, Hume, Hartley, the Mills did their philosophical work at the beginning or at the end or in the pauses of lives otherwise active, and addressed for the most part the common intelligence of their time. It may not have been ill for their fame; but their work itself is not what it otherwise might have been, and their manner of thinking has affected the whole character and standing of philosophical inquiry in England. If their work had been academic, it would probably have been much more sustained—better carried out when it did not lack comprehension, more comprehensive when it was well and carefully begun. The informality of their thought has undoubtedly prevented philosophy from obtaining the scientific consideration which it holds elsewhere. There has not been wanting in England

a generally diffused interest in the subject, such as is fed by discussions, more or less philosophical, mixed up with lighter literature in the pages of miscellaneous magazines; but of special interest, like that felt in mathematics or physics or chemistry by a multitude of active workers and a multitude of trained and continuous learners, there has hitherto been little. Even now the notion of a journal being founded to be taken up wholly with metaphysical subjects, as they are called, will little commend itself either to those who are in the habit of declaring with great confidence that there can be no science in such matters, or to those who would only play with them now and again.

The signs, notwithstanding, that mental science and philosophy have for some time past been cultivated with a more single-minded endeavour, and that the class of those who are specially interested is growing steadily larger, are neither few nor uncertain. Not only in the present generation have psychological works, conceived in the traditional spirit of English inquiry, been elaborated as never before: other works have been written with the object of bringing English thought into direct relation with the general philosophical movement of Europe; and in still others there has been developed a new spirit of large system. Whether the seats of academic instruction have yet been stirred to due activity is a question that will be considered in these pages; but it certainly can no longer be said, even by candid friends at home, that English inquirers and thinkers are not active in every field of philosophical effort, and it has been said abroad that, however it be with physical science, at least in psychology and philosophy the countrymen of Locke at present are leading the van. Not less significant is the voice that is heard from the foremost physical inquirers crying out for a wider and deeper comprehension of nature. The need is everywhere felt, as where in Germany some of the best philosophical work is being done by men like Helmholtz and Wundt who began their career as physiologists, but it has nowhere been more signally manifested than in England. The unity that belonged to human knowledge under the name of Philosophy, before the special sciences were, is now, when the sciences stand fast, again sought for under no other name than Philosophy. In such circumstances, the institution of a journal that should aim at giving expression to all new philosophical ideas and at making English readers acquainted with the progress of philosophical thought in other countries, cannot be regarded as inopportune. The time, at all events, has come for gauging the extent and depth of the interest professed in philosophy.

The projectors of the new journal had little doubt as to the form it should assume. However deeply impressed with the need for an organ that should leave the freest scope to general philosophical thinking, they were not prepared to be responsible for a publication that would display only or chiefly the speculative differences of individual thinkers. It might be a useful enterprise to bring even these to light, and, unless all general philosophy were excluded from the journal, they could in no case be concealed; but other work, still more pressing, stood waiting to be done. Philosophical thought in England has for the most part been based on psychology, when not wholly merged in it; and psychology, pursued as a positive science, ought to yield a continuous harvest of results, coherent among themselves and standing in relation with other results garnered in the scientific field. That psychology has not been unfruitful is the conviction of all those who continue to cultivate it upon the lines of the past—with new lights, it may be, but still upon the old tracks. Few, however, of its cultivators will deny that it has been far from as fruitful as could be wished, and even the most ardent must admit that it has by no means won the rank of an assured science in the common esteem.* Now, if there were a journal that set itself to record all advances in psychology, and gave encouragement to special researches by its readiness to publish them, the uncertainty hanging over the subject could hardly fail to be dispelled. Either psychology would in time pass with general consent into the company of the sciences, or the hollowness of its pretensions would be plainly revealed. Nothing less, in fact, is aimed at in the publication of MIND than to procure a decision of this question as to the scientific standing of psychology. Nor is the question less really submitted for judgment, because the projectors of the journal themselves think that the issue is not doubtful, and that the question remains pending chiefly from ignorance of the actual state of psychological inquiry and want of enlightenment as to the true conception of science.

The prospectus that has been issued tries to give a general idea of the width of field, or rather the variety of fields, whereon the psychologist is in these days called to range. Physiological investigation of the Nervous System in man and animals, by which mental science is brought into relation with

* The recent Royal Commission on Scientific Instruction and the Advancement of Science had no hesitation in limiting the scope of its inquiries to "the Sciences of Organic and Inorganic Nature, including . . . . the Sciences of Number and Magnitude, together with those which depend on Observation and Experiment, but excluding the Mental and Moral Sciences."—(*Third Report*, p. vii.)

biology and the physical sciences generally; objective study of all natural expressions or products of mind like Language, and all abnormal or morbid phases up to Insanity; comparative study, again objective, of the manners and customs of Human Races as giving evidence of their mental characteristics, also of mind as exhibited by the lower Animals—such are some of the more obvious heads of inquiry which the psychologist must keep in view. No such statement, however, can come near to exhausting the matter of psychology. Whatever place may be claimed for it among the sciences in respect of its method, psychology in respect of its subject must stand for ever apart. Include Mind, as it may possibly be included, in the widest conception of Nature, and it is like one half of the whole facing all the rest. Oppose it, as more commonly it is opposed, to Nature, and again Mind is nothing less than one half of all that exists; nay, in a most serious sense, it extends to all that exists, because that which we call Nature, in all its aspects and all its departments, must have an expression in terms of thought or subjective experience. It is in this view that Psychology may be shown to pass inevitably into Philosophy, but let it suffice here to have merely suggested why, although all objective lines of inquiry bearing more or less directly on mind will in turn be pursued in these pages, the fundamental consideration of mind is and must be subjective. Whoever enters into this position is able, without abandoning the firm ground of the positive sciences, to put himself in relation with the philosophic thought of all time and is raised above the narrowing influences of modern specialism.

Theoretic psychology has its practical application, as a whole, in the balanced training and culture of the individual mind, while it deals separately with functions whose natural play stands greatly in need of regulation. Considering how much attention has been given to psychology in England, it is somewhat remarkable that so little reference has been made to Education, whether in view of the immense practical importance of the subject, or as a means of testing the truth of psychological theory. The more scientific doctrine of mind which, we are apt to boast, has always been sought after in England, has borne little educational fruit, compared with the speculative theories of mind that have grown in rank profusion on German soil. A true psychology ought unquestionably to admit of being turned to the educator's purpose, and in no direction has the new journal a more decided opening for effective work at the present time. To speak, in the same connection, of such subjects as Logic, Æsthetics and Ethics, may seem strange, but there is good reason for so doing.

The existence, in more or less developed form, of the three distinct bodies of doctrine so named, is a signal confirmation of the theoretic distinction of Knowing, Feeling and Willing which has established itself, not without difficulty, in modern psychology, while the doctrines themselves have an obvious relation to the different aspects of mental culture. The psychologist is drawn on almost perforce to consider how the natural action of mind may be controlled and perfected, and it should therefore surprise no one that in a psychological journal a prominent place is given to mental Nomology, as Hamilton used to call it. From a philosophical point of view it is of course needless to justify the consideration of the true, the beautiful and the good in a journal whose subject is Mind.

With reference to general Philosophy or Metaphysic proper, psychology may be viewed as a kind of common ground whereon thinkers of widely different schools may meet, and, if they do not forthwith agree, may at least have their differences plainly formulated, as a first step towards any agreement that is possible. The new journal should thus, while promoting psychological science, help also to compose that secular strife which scientific inquirers as well as popular writers are never weary of representing as the opprobrium of philosophy. Strife, no doubt, is wasteful, and cannot be too quickly allayed; but it is well there should be no mistake, so far as this particular charge against philosophy is concerned. The kind of agreement that is possible in the special branches of physical science, is not possible in the region of general philosophy. How should it be possible, when the conditions of verification are so utterly different? It is almost absurd to think of it even as desirable. Physical science itself, as it becomes general, grows to be contested: neither the word "science" nor the word "physical" has virtue to charm away the possibilities of dissension that generality enfolds. The larger conceptions and principles of physical inquiry are so notoriously under dispute at the present day that it is almost trivial to mention the fact—not wholly trivial, only because it is so apt to be forgotten when the question turns upon the credit of philosophical doctrines. To bring philosophical inquiries, as far as possible, to their psychological base, seems the most that can be done to procure agreement in a sphere of thought where there must always be the widest scope for difference of opinion. If at the same time it is remembered that even in psychology special results may cover or correspond to vast classes of such objective facts and relations as make the staple of the physical sciences, it need not be matter of wonder that philosophical differences are hard to surmount.

Before closing these remarks it may not be amiss to refer to one peculiar feature in the conduct of the journal, as it is meant to be carried out; the more, because publicity is a necessary condition to the effective working of the plan. Books of any importance will be noticed on their first appearance, and a general idea will be given of their contents, without any pretence of critical appreciation. It should thus be possible to supply from quarter to quarter an approximately complete bibliographical record, which shall yet give real information not to be had from a bare list of titles. The farther task of critically examining the works of real importance it is desired to leave, as much as possible, to volunteers. Criticism on important books that is not founded upon leisurely study of them by men who read them naturally in the course of their own work, is worth little or nothing when it is not worth much less than nothing. Genuine readers of works bearing on the subjects covered by the Review are accordingly invited to send in critical notices of their own motion. The obvious objection that a volunteer critic is very likely to waste his pains because another may have anticipated him with a criticism on the same book, will be met by a simple expedient: more than one notice will without any hesitation be printed, if proceeding from competent hands. If two or more men, known to be fit judges, agree in commending or in condemning a book, the judgment will be only the more final. If they differ in their estimate, what more instructive to the general reader than to learn this difference and the grounds of it? The object, it may be said, is gained already by the concurrence of different journals. Hardly: for there are no journals at present that can, except occasionally, offer to their readers the kind of criticism which a special journal like MIND must constantly aim at furnishing. When a book has once had its general contents indicated on its appearance, criticism in a special journal should be directed straight to the new ideas in it with little or no formality of introduction and conclusion. The chances are that criticism of this cast from different pens would bear upon different ideas in the same work, and thus a reader might learn more from two or three short notes than by reading several formal notices that must all go over the same ground because they profess to deal with the whole book. On more than one of the works reviewed in the present number, notes of the kind suggested might well be offered by other critics.

EDITOR.

II.—THE COMPARATIVE PSYCHOLOGY OF MAN.*

While discussing with two members of the Anthropological Institute the work to be undertaken by its psychological section, I made certain suggestions which they requested me to put in writing. When reminded, some months after, of the promise I had made to do this, I failed to recall the particular suggestions referred to; but in the endeavour to remember them, I was led to glance over the whole subject of comparative human psychology. Hence resulted the following paper.

That making a general survey is useful as a preliminary to deliberate study, either of a whole or of any part, scarcely needs showing. Vagueness of thought accompanies the wandering about in a region without known bounds or landmarks. Attention devoted to some portion of a subject, in ignorance of its connection with the rest, leads to untrue conceptions. The whole cannot be rightly conceived without some knowledge of the parts; and no part can be rightly conceived out of relation to the whole.

To map out the comparative psychology of man must also conduce to the more methodic carrying on of inquiries. In this, as in other things, division of labour will facilitate progress; and that there may be division of labour, the work itself must be systematically divided.

We may conveniently separate the entire subject into three main divisions, arranged in the order of increasing speciality.

The first division will treat of the degrees of mental evolution of different human types, generally considered: taking account of both the mass of mental manifestation and the complexity of mental manifestation. This division will include the relations of these characters to physical characters—the bodily mass and structure, and the cerebral mass and structure. It will also include inquiries concerning the time taken in completing mental evolution, and the time during which adult mental power lasts; as well as certain most general traits of mental action, such as the greater or less persistence of emotions and of intellectual processes. The connection between the general mental type and the general social type should also be here dealt with.

In the second division may be conveniently placed apart inquiries concerning the relative mental natures of the sexes in each race. Under it will come such questions as these:—

* Read before the Anthropological Institute.

What differences of mental mass and mental complexity, if any, existing between males and females, are common to all races? Do such differences vary in degree, or in kind, or in both? Are there reasons for thinking that they are liable to change by increase or decrease? What relations do they bear in each case to the habits of life, the domestic arrangements, and the social arrangements? This division should also include in its scope the sentiments of the sexes towards one another, considered as varying quantitatively and qualitatively; as well as their respective sentiments towards offspring, similarly varying.

For the third division of inquiries may be reserved the more special mental traits distinguishing different types of men. One class of such specialities results from difference of proportion among faculties possessed in common; and another class results from the presence in some races of faculties that are almost or quite absent from others. Each difference in each of these groups, when established by comparison, has to be studied in connection with the stage of mental evolution reached, and has to be studied in connection with the habits of life and the social development, regarding it as related to these both as cause and consequence.

Such being the outlines of these several divisions, let us now consider in detail the subdivisions contained within each.

I.—Under the head of general mental evolution we may begin with the trait of—

1. *Mental mass.*—Daily experiences show us that human beings differ in volume of mental manifestation. Some there are whose intelligence, high though it may be, produces little impression on those around; while there are some who, when uttering even commonplaces, do it so as to affect listeners in a disproportionate degree. Comparison of two such makes it manifest that, generally, the difference is due to the natural language of the emotions. Behind the intellectual quickness of the one there is not felt any power of character; while the other betrays a momentum capable of bearing down opposition —a potentiality of emotion that has something formidable about it. Obviously the varieties of mankind differ much in respect of this trait. Apart from kind of feeling, they are unlike in amount of feeling. The dominant races overrun the inferior races mainly in virtue of the greater quantity of energy in which this greater mental mass shows itself. Hence a series of inquiries, of which these are some:—(*a*) What is the relation between mental mass and bodily mass? Manifestly, the small races are deficient in it. But it also appears that races

much upon a par in size—as, for instance, an Englishman and a Damara, differ considerably in mental mass. (*b*) What is its relation to mass of brain? and, bearing in mind the general law that in the same species, size of brain increases with size of body (though not in the same proportion), how far can we connect the extra mental mass of the higher races with an extra amount of brain beyond that which is proper to their greater bodily mass? (*c*) What relation, if any, is there between mental mass and the physiological state expressed in vigour of circulation and richness of blood, as severally determined by mode of life and general nutrition? (*d*) What are the relations of this trait to the social state, as predatory or industrial, nomadic or agricultural?

2. *Mental complexity.*—How races differ in respect of the more or less involved structures of their minds, will best be understood on recalling that unlikeness between the juvenile mind and the adult mind among ourselves, which so well typifies the unlikeness between the minds of savage and civilised. In the child we see absorption in special facts. Generalities even of a low order are scarcely recognised; and there is no recognition of high generalities. We see interest in individuals, in personal adventures, in domestic affairs; but no interest in political or social matters. We see vanity about clothes and small achievements; but little sense of justice: witness the forcible appropriation of one another's toys. While there have come into play many of the simpler mental powers, there has not yet been reached that mental complication of mind which results from the addition of powers evolved out of these simpler ones. Kindred differences of complexity exist between the minds of lower and higher races; and comparisons should be made to ascertain their kinds and amounts. Here, too, there may be a subdivision of the inquiries. (*a*) What is the relation between mental complexity and mental mass? Do not the two habitually vary together? (*b*) What is the relation to the social state, as more or less complex?—that is to say, Do not mental complexity and social complexity act and react on each other?

3. *Rate of mental development.*—In conformity with the biological law, that the higher the organisms the longer they take to evolve, members of the inferior human races may be expected to complete their mental evolution sooner than members of the superior races; and we have evidence that they do this. Travellers from all regions comment, now on the great precocity of children among savage and semi-civilised peoples, and now on the early arrest of their mental progress. Though we scarcely need more proofs that this general contrast exists, there remains

to be asked the question, whether it is consistently maintained throughout all orders of races, from the lowest to the highest —whether, say, the Australian differs in this respect from the Hindu, as much as the Hindu does from the European. Of secondary inquiries coming under this sub-head may be named several. (*a*) Is this more rapid evolution and earlier arrest always unequally shown by the two sexes ; or, in other words, are there in lower types proportional differences in rate and degree of development, such as higher types show us ? (*b*) Is there in many cases, as there appears to be in some cases, a traceable relation between the period of arrest and the period of puberty ? (*c*) Is mental decay earlier in proportion as mental evolution is rapid ? (*d*) Can we in other respects assert that where the type is low, the entire cycle of mental changes between birth and death—ascending, uniform, descending—comes within a shorter interval ?

4. *Relative plasticity.*—Is there any relation between the degree of mental modifiability which remains in adult life, and the character of the mental evolution in respect of mass, complexity, and rapidity ? The animal kingdom at large yields us reasons for associating an inferior and more rapidly-completed mental type, with a relatively automatic nature. Lowly organised creatures, guided almost entirely by reflex actions, are in but small degrees changeable by individual experiences. As the nervous structure complicates, its actions become less rigorously confined within pre-established limits ; and as we approach the highest creatures, individual experiences take larger and larger shares in moulding the conduct : there is an increasing ability to take in new impressions and to profit by the acquisitions. Inferior and superior human races are contrasted in this respect. Many travellers comment on the unchangeable habits of savages. The semi-civilised nations of the East, past and present, were, or are, characterised by a greater rigidity of custom than characterises the more civilised nations of the West. The histories of the most civilised nations show us that in their earlier times the modifiability of ideas and habits was less than it is at present. And if we contrast classes or individuals around us, we see that the most developed in mind are the most plastic. To inquiries respecting this trait of comparative plasticity, in its relations to precocity and early completion of mental development, may be fitly added inquiries respecting its relations to the social state, which it helps to determine, and which reacts upon it.

5. *Variability.*—To say of a mental nature that its actions are extremely inconstant, and at the same time to say that it is a relatively unchangeable nature, apparently implies a contradiction. When, however, the inconstancy is understood as

referring to the manifestations which follow one another from minute to minute, and the unchangeableness to the average manifestations, extending over long periods, the apparent contradiction disappears ; and it becomes comprehensible that the two traits may, and ordinarily do, co-exist. An infant, quickly weary with each kind of perception, wanting ever a new object, which it soon abandons for something else, and alternating a score times a day between smiles and tears, shows us a very small persistence in each kind of mental action : all its states, intellectual and emotional, are transient. Yet at the same time its mind cannot be easily changed in character. True, it changes spontaneously in due course ; but it long remains incapable of receiving ideas or emotions beyond those of simple orders. The child exhibits less rapid variations, intellectual and emotional, while its educability is greater. Inferior human races show us this combination, great rigidity of general character with great irregularity in its passing manifestations. Speaking broadly, while they resist permanent modification they lack intellectual persistence, and they lack emotional persistence. Of various low types we read that they cannot keep the attention fixed beyond a few minutes on anything requiring thought, even of a simple kind. Similarly with their feelings : these are less enduring than those of civilised men. There are, however, qualifications to be made in this statement ; and comparisons are needed to ascertain how far these qualifications go. The savage shows great persistence in the action of the lower intellectual faculties. He is untiring in minute observation. He is untiring, also, in that kind of perceptive activity which accompanies the making of his weapons and ornaments : often persevering for immense periods in carving stones, &c. Emotionally, too, he shows persistence not only in the motives prompting these small industries, but also in certain of his passions—especially in that of revenge. Hence, in studying the degrees of mental variability shown us in the daily lives of the different races, we must ask how far variability characterises the whole mind, and how far it holds only of parts of the mind.

6. *Impulsiveness.*—This trait is closely allied with the last : unenduring emotions are emotions which sway the conduct now this way and now that, without any consistency. The trait of impulsiveness may, however, be fitly dealt with separately, because it has other implications than mere lack of persistence. Comparisons of the lower human races with the higher, appear generally to show that, along with brevity of the passions, there goes violence. The sudden gusts of feeling which men of inferior types display, are excessive in degree as they are short in duration ; and there is probably a connection between these

two traits : intensity sooner producing exhaustion. Observing that the passions of childhood illustrate this connection, let us turn to certain interesting questions concerning the decrease of impulsiveness which accompanies advance in evolution. The nervous processes of an impulsive being, are less remote from reflex actions than are those of an unimpulsive being. In reflex actions we see a simple stimulus passing suddenly into movement : little or no control being exercised by other parts of the nervous system. As we ascend to higher actions, guided by more and more complicated combinations of stimuli, there is not the same instantaneous discharge in simple motions ; but there is a comparatively deliberate and more variable adjustment of compound motions, duly restrained and proportioned. It is thus with the passions and sentiments in the less developed natures and in the more developed natures. Where there is but little emotional complexity, an emotion, when excited by some occurrence, explodes in action before the other emotions have been called into play ; and each of these, from time to time, does the like. But the more complex emotional structure is one in which these simpler emotions are so co-ordinated that they do not act independently. Before excitement of any one has had time to cause action, some excitement has been communicated to others —often antagonistic ones—and the conduct becomes modified in adjustment to the combined dictates. Hence results a decreased impulsiveness, and also a greater persistence. The conduct pursued, being prompted by several emotions co-operating in degrees which do not exhaust them, acquires a greater continuity; and while spasmodic force becomes less conspicuous, there is an increase in the total energy. Examining the facts from this point of view, there are sundry questions of interest to be put respecting the different races of men. (*a*) To what other traits than degree of mental evolution is impulsiveness related? Apart from difference in elevation of type, the New-World races seem to be less impulsive than the Old-World races. Is this due to constitutional apathy? Can there be traced (other things equal) a relation between physical vivacity and mental impulsiveness? (*b*) What connection is there between this trait and the social state? Clearly a very explosive nature—such as that of the Bushman—is unfit for social union; and, commonly, social union, when by any means established, checks impulsiveness. (*c*) What respective shares in checking impulsiveness are taken by the feelings which the social state fosters—such as the fear of surrounding individuals, the instinct of sociality, the desire to accumulate property, the sympathetic feelings, the sentiment of justice? These, which require a social environment for their development, all of them involve imaginations of consequences

more or less distant; and thus imply checks upon the promptings of the simpler passions. Hence arise the questions —In what order, in what degrees, and in what combinations do they come into play?

7. One further general inquiry of a different kind may be added. What effect is produced on mental nature by mixture of races? There is reason for believing that throughout the animal kingdom, the union of varieties that have become widely divergent is physically injurious; while the union of slightly divergent varieties is physically beneficial. Does the like hold with the mental nature? Some facts seem to show that mixture of human races extremely unlike produces a worthless type of mind—a mind fitted neither for the kind of life led by the higher of the two races, nor for that led by the lower—a mind out of adjustment to all conditions of life. Contrariwise, we find that peoples of the same stock, slightly differentiated by lives carried on in unlike circumstances for many generations, produce by mixture a mental type having certain superiorities. In his work on *The Huguenots*, Mr. Smiles points out how large a number of distinguished men among us have descended from Flemish and French refugees; and M. Alphonse De Candolle, in his *Histoire des Sciences et des Savants depuis deux Siècles*, shows that the descendants of French refugees in Switzerland have produced an unusually great proportion of scientific men. Though, in part, this result may be ascribed to the original natures of such refugees, who must have had that independence which is a chief factor in originality, yet it is probably in part due to mixture of races. For thinking this, we have evidence which is not open to two interpretations. Professor Morley draws attention to the fact that, during seven hundred years of our early history, "the best genius of England sprang up on the line of country in which Celts and Anglo-Saxons came together." In like manner, Mr. Galton, in his *English Men of Science*, shows that in recent days these have mostly come from an inland region, running generally from north to south, which we may reasonably presume contains more mixed blood than do the regions east and west of it. Such a result seems probable *à priori*. Two natures respectively adapted to slightly unlike sets of social conditions, may be expected by their union to produce a nature somewhat more plastic than either—a nature more impressible by the new circumstances of advancing social life, and therefore more likely to originate new ideas and display modified sentiments. The comparative psychology of man may, then, fitly include the mental effects of mixture; and among derivative inquiries we may ask—How far the conquest of race by race has been

instrumental in advancing civilisation by aiding mixture, as well as in other ways?

II.—The second of the three leading divisions named at the outset is less extensive. Still, concerning the relative mental natures of the sexes in each race, questions of much interest and importance may be raised.

1. *Degree of difference between the sexes.*—It is an established fact that, physically considered, the contrast between males and females is not equally great in all types of mankind. The bearded races, for instance, show us a greater unlikeness between the two than do the beardless races. Among South American tribes, men and women have a greater general resemblance in form, &c., than is usual elsewhere. The question, then, suggests itself, Do the mental natures of the sexes differ in a constant or in a variable degree? The difference is unlikely to be a constant one; and, looking for variation, we may ask what is its amount, and under what conditions does it occur?

2. *Difference in mass and in complexity.*—The comparisons between the sexes, of course, admit of subdivisions parallel to those made in the comparisons between the races. Relative mental mass and relative mental complexity have chiefly to be observed. Assuming that the great inequality in the cost of reproduction to the two sexes is the cause of unlikeness in mental mass, as in physical mass, this difference may be studied in connection with reproductive differences presented by the various races, in respect of the ages at which reproduction commences, the period over which it lasts. An allied inquiry may be joined with this; namely, how far the mental development of the two sexes are affected by their relative habits in respect to food and physical exertion? In many of the lower races, the women, treated with great brutality, are, physically, very inferior to the men; excess of labour and defect of nutrition being apparently the combined causes. Is any arrest of mental development simultaneously caused?

3. *Variation of the differences.*—If the unlikeness, physical and mental, of the sexes is not constant, then, supposing all races have diverged from one original stock, it follows that there must have been transmission of accumulated differences to those of the same sex in posterity. If, for instance, the pre-historic type of man was beardless, then the production of a bearded variety implies that within that variety the males continued to transmit an increasing amount of beard to descendants of the same sex. This limitation of heredity by sex, shown us in multitudinous ways throughout the animal kingdom, probably applies to the cerebral structures as much as

to other structures. Hence the question—Do not the mental natures of the sexes in alien types of Man diverge in unlike ways and degrees?

4. *Causes of the differences.*—Is any relation to be traced between this variable difference and the variable parts the sexes play in the business of life? Assuming the cumulative effects of habit on function and structure, as well as the limitation of heredity by sex, it is to be expected that if, in any society, the activities of one sex, generation after generation, differ from those of the other, there will arise sexual adaptations of mind. Some instances in illustration may be named. Among the Africans of Loango and other districts, as also among some of the Indian Hill-tribes, the men and women are strongly contrasted as respectively inert and energetic: the industry of the women having apparently become so natural to them that no coercion is needed. Of course, such facts suggest an extensive series of questions. Limitation of heredity of sex may account both for those sexual differences of mind which distinguish men and women in all races, and for those which distinguish them in each race, or each society. An interesting subordinate inquiry may be, how far such mental differences are inverted in cases where there is inversion of social and domestic relations; as among those Khasi Hill-tribes whose women have so far the upper hand that they turn off their husbands in a summary way if they displease them.

5. *Mental modifiability in the two sexes.*—Along with comparisons of races in respect of mental plasticity may go parallel comparisons of the sexes in each race. Is it true always, as it appears to be generally true, that women are less modifiable than men? The relative conservatism of women—their greater adhesion to established ideas and practices—is manifest in many civilised and semi-civilised societies. Is it so among the uncivilised? A curious instance of greater adhesion to custom by women than by men is given by Dalton, as occurring among the Juangs, one of the lowest wild tribes of Bengal. Until recently the only dress of both sexes was something less than that which the Hebrew legend gives to Adam and Eve. Years ago the men were led to adopt a cloth bandage round the loins, in place of the bunch of leaves; but the women adhere to the aboriginal habit: a conservatism shown where it might have been least expected.

6. *The sexual sentiment.*—Results of value may be looked for from comparisons of races made to determine the amounts and characters of the higher feelings to which the relations of the sexes give rise. The lowest varieties of mankind have but small endowments of these feelings. Among varieties of higher

types, such as the Malayo-Polynesians, these feelings seem considerably developed: the Dyaks, for instance, sometimes display them in great strength. Speaking generally, they appear to become stronger with the advance of civilisation. Several subordinate inquiries may be named. (*a*) How far is development of the sexual sentiment dependent upon intellectual advance —upon growth of imaginative power? (*b*) How far is it related to emotional advance; and especially to evolution of those emotions which originate from sympathy? What are its relations to polyandry and polygyny? (*c*) Does it not tend towards, and is it not fostered by, monogamy? (*d*) What connection has it with maintenance of the family bond, and the consequent better rearing of children?

III.—Under the third head, to which we may now pass, come the more special traits of different races.

1. *Imitativeness.*—One of the characteristics in which the lower types of men show us a smaller departure from reflex action than do the higher types, is their strong tendency to mimic the motions and sounds made by others—an almost involuntary habit which travellers find it difficult to check. This meaningless repetition, which seems to imply that the idea of an observed action cannot be framed in the mind of the observer without tending forthwith to discharge itself in the action conceived (and every ideal action is a nascent form of the consciousness accompanying performance of such action), evidently diverges but little from the automatic; and decrease of it is to be expected along with increase of self-regulating power. This trait of automatic mimicry is evidently allied with that less automatic mimicry which shows itself in greater persistence of customs. For customs adopted by each generation from the last, without thought or inquiry, imply a tendency to imitate which overmasters critical and sceptical tendencies: so maintaining habits for which no reason can be given. The decrease of this irrational mimicry, strongest in the lowest savage and feeblest in the highest of the civilised, should be studied along with the successively higher stages of social life, as being at once an aid and a hindrance to civilisation; an aid in so far as it gives that fixity to the social organisation without which a society cannot survive; a hindrance in so far as it offers resistance to changes of social organisation that have become desirable.

2. *Incuriosity.*—Projecting our own natures into the circumstances of the savage, we imagine ourselves as marvelling greatly on first seeing the products and appliances of civilised life. But we err in supposing that the savage has

feelings such as they would have in his place. Want of rational curiosity respecting these incomprehensible novelties, is a trait remarked of the lower races wherever found; and the partially-civilised races are distinguished from them as exhibiting rational curiosity. The relation of this trait to the intellectual nature, to the emotional nature, and to the social state, should be studied.

3. *Quality of thought.*—Under this vague head may be placed many sets of inquiries, each of them extensive—(*a*) The degree of generality of the ideas; (*b*) the degree of abstractness of the ideas; (*c*) the degree of definiteness of the ideas; (*d*) the degree of coherence of the ideas; (*e*) the extent to which there have been developed such notions as those of *class*, of *cause*, of *uniformity*, of *law*, of *truth*. Many conceptions which have become so familiar to us that we assume them to be the common property of all minds, are no more possessed by the lowest savage than they are by our own children; and comparisons of types should be so made as to elucidate the processes by which such conceptions are reached. The development under each head has to be observed—(*a*) independently in its successive stages; (*b*) in connection with the co-operative intellectual conceptions; (*c*) in connection with the progress of language, of the arts, and of social organisation. Already linguistic phenomena have been used in aid of such inquiries: and more systematic use of them should be made. Not only the number of general words, and the number of abstract words, in a people's vocabulary should be taken as evidence, but also their *degrees* of generality and abstractness; for there are generalities of the first, second, third, &c., orders and abstractions similarly ascending in degree. *Blue* is an abstraction referring to one class of impressions derived from visible objects; *colour* is a higher abstraction referring to many such classes of visual impressions; *property* is a still higher abstraction referring to classes of impressions received not through the eyes alone, but through other sense-organs. If generalities and abstractions were arranged in the order of their extensiveness and in their grades, tests would be obtained which, applied to the vocabularies of the uncivilised, would yield definite evidence of the intellectual stages reached.

4. *Peculiar aptitudes.*—To such specialities of intelligence as mark different degrees of evolution, have to be added the minor ones related to modes of life: the kinds and degrees of faculty which have become organised in adaptation to daily habits—skill in the use of weapons, powers of tracking, quick discrimination of individual objects. And under this head may fitly come inquiries concerning some race-peculiarities of the

æsthetic class, not at present explicable. While the remains from the Dordogne caves show us that their inhabitants, low as we must suppose them to have been, could represent animals, both by drawing and carving, with some degree of fidelity; there are existing races, probably higher in other respects, who seem scarcely capable of recognising pictorial representations. Similarly with the musical faculty. Almost or quite wanting in some inferior races, we find it in other races, not of high grade, developed to an unexpected degree: instance the Negroes, some of whom are so innately musical, that, as I have been told by a missionary among them, the children in native schools, when taught European psalm-tunes, spontaneously sing seconds to them. Whether any causes can be discovered for race-peculiarities of this kind, is a question of interest.

5. *Specialities of emotional nature.*—These are worthy of careful study, as being intimately related to social phenomena—to the possibility of social progress, and to the nature of the social structure. Of those to be chiefly noted there are—(*a*) Gregariousness or sociality—a trait in the strength of which races differ widely: some, as the Mantras, being almost indifferent to social intercourse; others being unable to dispense with it. Obviously the degree of the desire for the presence of fellow-men, affects greatly the formation of social groups, and consequently underlies social progress. (*b*) Intolerance of restraint. Men of some inferior types, as the Mapuché, are ungovernable; while those of other types, no higher in grade, not only submit to restraint, but admire the persons exercising it. These contrasted traits have to be observed in connection with social evolution; to the early stages of which they are respectively antagonistic and favourable. (*c*) The desire for praise is a trait which, common to all races, high or low, varies considerably in degree. There are quite inferior races, as some of those in the Pacific States, whose members sacrifice without stint to gain the applause which lavish generosity brings; while, elsewhere, applause is sought with less eagerness. Notice should be taken of the connection between this love of approbation and the social restraints; since it plays an important part in the maintenance of them. (*d*) The acquisitive propensity. This, too, is a trait the various degrees of which, and the relations of which to the social state, have to be especially noted. The desire for property grows along with the possibility of gratifying it; and this, extremely small among the lowest men, increases as social development goes on. With the advance from tribal property to family property and individual property, the notion of private right of possession gains definiteness, and the love of acquisition strengthens. Each step towards an orderly social

state, makes larger accumulations possible, and the pleasures achievable by them more sure; while the resulting encouragement to accumulate, leads to increase of capital and further progress. This action and re-action of the sentiment and the social state, should be in every case observed.

6. *The altruistic sentiments.*—Coming last, these are also highest. The evolution of them in the course of civilisation shows us very clearly the reciprocal influences of the social unit and the social organism. On the one hand, there can be no sympathy, nor any of the sentiments which sympathy generates, unless there are fellow-beings around. On the other hand, maintenance of union with fellow-beings depends in part on the presence of sympathy, and the resulting restraints on conduct. Gregariousness or sociality favours the growth of sympathy; increased sympathy conduces to closer sociality and a more stable social state; and so, continuously, each increment of the one makes possible a further increment of the other. Comparisons of the altruistic sentiments resulting from sympathy, as exhibited in different types of men and different social states, may be conveniently arranged under three heads—(*a*) Pity, which should be observed as displayed towards offspring, towards the sick and aged, and towards enemies. (*b*) Generosity (duly discriminated from the love of display) as shown in giving; as shown in the relinquishment of pleasures for the sake of others; as shown by active efforts on others' behalf. The manifestations of this sentiment, too, are to be noted in respect of their range—whether they are limited to relatives; whether they extend only to those of the same society; whether they extend to those of other societies; and they are also to be noted in connection with the degree of providence—whether they result from sudden impulses obeyed without counting the cost, or go along with a clear foresight of the future sacrifices entailed. (*c*) Justice. This most abstract of the altruistic sentiments is to be considered under aspects like those just named, as well as under many other aspects—how far it is shown in regard to the lives of others; how far in regard to their property; how far in regard to their various minor claims. And the comparisons of men in respect of this highest sentiment should, beyond all others, be carried on along with observations on the accompanying social state, which it largely determines — the forms and actions of government; the character of the laws; the relations of classes.

Such, stated as briefly as consists with clearness, are the leading divisions and subdivisions under which the Comparative Psychology of Man may be arranged. In going rapidly over

so wide a field, I have doubtless overlooked much that should be included. Doubtless, too, various of the inquiries named will branch out into subordinate inquiries well worth pursuing. Even as it is, however, the programme is extensive enough to occupy numerous investigators who may with advantage take separate divisions.

Though, after occupying themselves with primitive arts and products, anthropologists have devoted their attention mainly to the physical characters of the human races; it must, I think, be admitted that the study of these yields in importance to the study of their psychical characters. The general conclusions to which the first set of inquiries may lead, cannot so much affect our views respecting the highest classes of phenomena as can the general conclusions to which the second set may lead. A true theory of the human mind vitally concerns us; and systematic comparisons of human minds, differing in their kinds and grades, will help us in forming a true theory. Knowledge of the reciprocal relations between the characters of men and the characters of the societies they form, must influence profoundly our ideas of political arrangements. When the interdependence of individual nature and social structure is understood, our conceptions of the changes now taking place, and hereafter to take place, will be rectified. A comprehension of mental development as a process of adaptation to social conditions, which are continually remoulding the mind, and are again remoulded by it, will conduce to a salutary consciousness of the remoter effects produced by institutions upon character; and will check the grave mischiefs which ignorant legislation now causes. Lastly, a right theory of mental evolution as exhibited by humanity at large, giving a key, as it does, to the evolution of the individual mind, must help to rationalise our perverse methods of education; and so to raise intellectual power and moral nature. HERBERT SPENCER.

III.—PHYSIOLOGICAL PSYCHOLOGY IN GERMANY.

THE recent work of Professor Wundt* may be said to have defined the boundaries of a new department of research in Germany. It collects and puts into systematic form the results of a number of more or less isolated inquiries into such subjects as the functions of the several nervous centres, the precise relations of sensation in respect of quality and quantity

* *Grundzüge der physiologischen Psychologie, von* WILHELM WUNDT. Leipzig, 1873-4.

to physical stimulation, the physiological distinction between sensation and idea, and the causes of the confusion between the two in many abnormal conditions of the organism. These and other inquiries have as their common aim the determination of the exact physiological conditions of a certain group of mental phenomena. Their common presupposition is that every mental process, from the simple sensation which follows as the direct result of external stimulation up to the most subtle and complex operation of thought, has, as its obverse, a physical process, that conscious activity goes on at every point hand in hand with nervous activity. Wundt has seized this general aim of previous researches, has sought to show the convergence of their methods as well as to fill up hypothetically many of the intervening spaces of the field.

The completion, even in rough outline, of this new scientific structure, may be regarded, we think, as an event of the first importance. Its real significance lies in the fact that it is the wresting of the whole field of phenomenal psychology out of the hands of the trained metaphysicians by an order of inquirers who bring no metaphysical assumptions to their new study, who are as free from the almost puerile negative dogmatism of the materialists as from the prepossessions of the transcendental psychologists, who clearly see the phenomenal distinction between the spiritual and the material, and are content in the temper of true *Naturforscher* to confine their attention to the purely phenomenal aspects of their subject. In order to understand the full import of this movement, we may do well just to glance at the recent course of psychological speculation in Germany.

It is not too much to say that till the labours of the physiologists began, there existed nothing like a scientific conception of psychology in Germany. What went and still goes as psychology among professed philosophers is any kind of attempt to determine the substance of mind with the view of embodying this idea in an ultimate ontological theory. We find little patience in the observation and classification of mental phenomena, little penetrative insight into the causal relations of these phenomena; on the other hand we see abundant metaphysical ingenuity in building new hypotheses on arbitrarily selected groups of facts.

These dominant features of German psychology might be illustrated by reference to the systems of all the professional writers on the subject from Leibnitz downwards. The method of philosophising common to these thinkers is the reduction of psychology to metaphysic; and the effects of this on the scientific character of psychology are seen most conspicuously in

the systems which accord a distinct place to a theory of mind. We refer not to such transcendental constructions as the *Lehre vom subjectiven Geiste* of Hegel, but to such quasi-scientific investigations of the subject as are offered in the system of *Pneumatik* left us by Leibnitz, in the scheme of *Eidologie* unfolded by Herbart, and even in the far more sober system of *Psychologie als Naturwissenschaft*, raised by Beneke. The obstinate persistence of the metaphysical method in this domain cannot better be illustrated than by a reference to this last attempt to found a science of psychology. Herbart had made a step towards a more scientific view of the subject by rejecting the venerable hypothesis of occult mental faculties. It was no inconsiderable reform in psychology to substitute the conception of a mental process for that of a mental faculty; but Herbart, unfortunately, missed the rich fruit of this new idea by postulating a number of conceptual processes—such as mutual resistances and endeavours to blend—of which we have no certain knowledge. Beneke, while professing to follow Herbart's direction,* really re-instated in a modified form the anti-scientific conception of mental faculties. He looked on every mental event or "structure" as the result of two factors, a stimulus (*Reiz*) and an original faculty or force (*Ur-vermögen*). It is true that he gave a special interpretation to these terms, and cordially rejected the old "powers," such as memory, imagination, and will, which he termed "hypostasised class-notions." It is also true that he recognised the possibility of the growth of new mental capabilities. Nevertheless, this theory of *Ur-vermögen*, as real forces constituting the elements of the mind, is distinctly unscientific and metaphysical. In order to transform it into a scientific conception, it would have been necessary to regard mental phenomena as the obverse of material processes; and for this the metaphysicians were unprepared.

The foundations of an inductive and experimental science of mind in Germany had to be laid by another class of workers than the metaphysicians. The materials of the science were ready to hand. The prevailing tendency of the Germans to subjective reflection renders them familiar with the chief operations of thought, emotion, and action. Every cultivated German could think with a certain amount of concentration on such topics as the perception of the external world and the freedom of the will. What was wanted for laying the founda-

* In point of fact he thought he was making a great advance on Herbart, for while the latter had recognised three bases of psychology, metaphysics, mathematics, and internal experience, Beneke admitted only the last.

tions of the new science was familiarity with strict scientific methods of research, a habit of mind,—the result of severe discipline in other departments of inquiry,—of distinguishing fact from theory, of seeking the most precise definition of the phenomena to be studied, and of demanding the most rigorous proof of any proposition offered in explanation of the facts. These qualifications were possessed in an eminent degree by that line of distinguished physiologists of which Johannes Müller may perhaps be termed the first ancestor.

That physiologists have thus gradually encroached on the region of psychology, is a fact which should excite no wonder. For in a certain sense physiology may be said to include the whole of empirical psychology. If every mental act is a function of some part of the nervous system, then a complete account of this system would imply a complete explanation of mental processes, which are its functions.

Of course, physiological science is even now far from that point at which she could supply from the objective side a full interpretation of all known mental phenomena. The exceedingly subtle actions of volition, for example, still await their physiological explanation—an explanation which, when it arrives, will serve to dispel from the subject a good deal of metaphysical haze. The region in which German physiology has been most successful in elucidating mental processes, is that of the senses. Here it has been possible to employ the objective method with full advantage. The quality and quantity of the physical process to be studied have been accurately defined by means of carefully arranged experiments, and the variations in the subjective sensation accompanying changes in the objective process, have been estimated in the best possible manner. In this way the analysis of sensation has been carried to a much further point than that reached by subjective observation alone. Moreover, both the quality and the quantity of our sensations have been more precisely determined, and new light has been shed even on such *primâ facie* un-physiological subjects as the nature of perception and the genesis of our notions of space. Not only so, but the careful experimental study of the operations of sense has involved a consideration of some of the more intricate mental laws. It has been found that what seem to be the most simple impressions of an adult mind contain an admixture of intellectual and volitional activity; and thus it has happened that *savants* who proposed simply to make an exhaustive study of the senses and their functions, found themselves compelled to discuss the nature and laws of the higher mental operations.

The principal steps in the history of this new branch of

research in Germany may be easily indicated.* It received a part of its impetus at first from a metaphysical impulse. Johannes Müller, the founder of this school of workers, thought he could supply a physiological basis for Kant's doctrine of the spontaneity of the subject in perception. His foremost proposition was that the several orders of nervous fibre have their own specific energy, owing to which they do not respond in the same way to a given stimulus, as electrical or mechanical action, but, re-acting according to their peculiar nature, produce out of precisely the same mode of stimulation, qualitatively unlike sensations. This theory has been very warmly discussed by later writers, and has proved a powerful stimulus to an exact observation of the nature and action of the senses. Müller sought, moreover, to find a physiological equivalent for Kant's notion of space as a subjective form, and he did so by assuming that the retina has an innate feeling of its own extension. This hypothesis, which seems to imply one of two rather startling assertions, either that the retina is the seat of sensation, or that the mind wherever situated has a direct cognisance of the retina and its arrangement of parts, was the first crude form of the "nativistic" theory of visual perception. It has several times been elaborated into new forms, some of which are sufficiently unlike their prototype. Among the latest exponents of this view, E. Hering may be singled out as distinguished by the thoroughness of his knowledge and the force of his reasonings. To this nativistic theory of visual perception there has been opposed the "empiristic" view, according to which our intuitions of direction and distance have been slowly built up out of more elementary experiences. This theory, while taking Berkeley's doctrine as its starting point, has been worked out with characteristic German independence into new forms. We may name Lotze, Helmholtz, and Wundt among those who have done most to re-construct the derivative hypothesis. This discussion has given a great impetus to experimental research; and whoever has carefully read the literature of the subject, for example, Helmholtz's great work on Physiological Optics, will probably admit that these methods of research only need to be worked to a further point in order to yield ample data for the solution of the question.

We may add that in the present paper Wundt's contribution to the theory of space-perception will not be dwelt on, it being intended, with the permission of the editor, to discuss the

* For a fuller account of these researches, see the writer's Essay on *Recent German Experiments with Sensation*, in his volume, *Sensation and Intuition*.

several German theories on this subject, together with the facts on which they are based, in another article.

While the physiological contribution to mental science in Germany thus originated in part in a desire to support certain metaphysical principles, it soon became independent of any such extraneous motive, and was sustained solely by the scientific impulse to ascertain and to interpret as completely as possible the facts brought under investigation. The fruit of this eminently positive treatment of the phenomena of the senses lies stored in the highly valuable collection of discoveries respecting the quantitative aspects of sensation and the relation of these to the accompanying nervous processes. This department of physiological inquiry has been largely carried on by help of electric stimulation, a mode of experiment introduced by Ritter, improved on by Purkinje and others, greatly elucidated by the celebrated researches of Du Bois Reymond and his followers into the electric phenomena of nerve, and giving promise recently of throwing light not only on the actions of the senses but also on those of the central organs. It is impossible to review in detail the long series of investigations relating to the dimensions of sensation which have been carried out by German physiologists. They date back to a period antecedent to that of Müller, though they have only recently been carried out in a systematic way by a kind of scientific concert. The results thus attained are very abundant and must be considered as a valuable addition to the physiological basis of psychology. They include among other points approximate determinations of the degree or force, and also the duration of stimulation necessary to the least possible sensation, of the changes in a sensation consequent on the prolongation of a given stimulus, and of the precise duration of a sensation after the stimulation has ceased. This quantitative determination of sensation was naturally carried out in the first instance in the department of visual impression. Ehrenberg, Johannes Müller himself, and Plateau may be mentioned among those who first assisted in building up this part of the science of the senses. It is however by the labours of more recent investigators, including Volkmann, E. H. Weber, Fechner, Wundt, and Helmholtz, that the quantitative appreciation of sensation has been mainly accomplished. Weber's researches into the limits of discriminative local sensibility, directed in the first instance to the impressions of the tactile surface, and extended by himself and others, including Helmholtz, Förster, Aubert, to retinal impressions, mark an important step in the progress of this method of study, while the yet more remarkable generalisation on the facts thus collected reached by

Fechner and formulated by him in his famous psycho-physical law, has served to reduce this department of observation to something like a distinct and complete branch of the science of physiological psychology. Fechner's employment of the least recognisable sensation and of the least recognisable difference of sensation as constant units, the same for all orders of impression, must be regarded as a most fruitful extension of the scope of subjective observation by the addition of an objective method acquired in the region of physical research.

One or two other lines of inquiry pursued by these first builders of the edifice of physiological psychology deserve particular mention. It may be readily supposed that in a study of sensation carried on *pari passu* with the observation of nervous action, the question of the ultimate elements of our sensuous impressions would receive further elucidation. By help of the objective method here employed, we are enabled to look back on simple types of feeling which precede and enter as constituents into the seemingly indivisible sensations which subjective observation reaches as its ultimate elements. This extended analysis of sensation has led to the inquiry how far all the strongly marked orders of impression, the feelings of sound, light, &c., contain some common elementary basis, and thus the question of the specific energy of the different orders of nerve has acquired a new significance. Finally, attention may be called to the fruitful employment of objective experiment by these physiologists with a view to determine the proportion of immediate impression and of derivative inference in the simple perceptions of the senses. This line of inquiry, which is of supreme value for determining the precise operation of the laws of intellectual action, has been mainly directed to the subject of space-perceptions, that is to say, to the modes of visual apprehension of direction, distance, magnitude, &c. At the same time the experimental study of the illusions of the senses has helped to elucidate the growth of objective perception as a whole, showing under what conditions subjective feeling passes into objective intuition, and what are the elements which co-operate in the formation of our clear and stable conceptions of single and persistent objects.

With such genuine work already done, and such positive results already established, Wundt has set himself to the important supplementary task of bringing together the several lines of inquiry into one scheme and co-ordinating them as parts of one science. It is worth noting that he names this new branch physiological psychology, and not mental physiology, an expression adopted by some English writers for a

similar field of research. Wundt's phrase seems to lay stress on the fact that a certain portion of the science of mind is to be built up by an extension of the proper methods of physiological inquiry. It marks off that region of mental facts and laws which requires for its complete illumination the co-operation of physiological observation and experiment.

It will be quite impossible to give in a single article a very full account of the varied and closely packed contents of Professor Wundt's treatise. We must be content to indicate very briefly the main divisions of the author's exposition, and after this to enter more fully into one or two of the most valuable among his original contributions to the science he seeks to define.

The first section of the work is devoted to the nervous system and its functions. The latest results of anatomical research respecting the nature of the nervous elements, the paths of the conducting fibres in the central regions, and the distribution of the masses of grey matter, are ably stated, and light is thrown on the precise relations of the several parts of the nervous centres by a very full account of their morphological development. The author is no less full in his account of the functions of the central masses, making good use of the latest experiments, yet always maintaining a wise caution in drawing conclusions. As an example of this scientific moderation we may quote the remark, greatly emphasised, that the precise localisation of the central functions is rendered exceedingly difficult by the existence in the nervous substance of so large a capability of vicarious or substitutive work, which circumstance makes the conclusions of vivisectional experiment as well as of pathological observation almost nugatory.

Passing by a chapter on the physiological mechanics of the nervous system which contains a series of more or less hypothetical reasonings of great ingenuity, and worthy to be compared with Mr. Spencer's speculations in the same domain, we come to the second section of Professor Wundt's work, that which treats of the sensations. This part of the treatise is full of interest from beginning to end. To sensation are assigned three properties, intensity, quality and emotional tone *(Gefühlston)*. The duration and extensive magnitude of a sensation are not looked on as elementary and original properties. A chapter on the intensity of sensation gives us a clear summary of the experiments of Weber and Fechner, and a statement of the psycho-physical law laid down by the latter. Wundt makes a valuable addition to Fechner's method in supplementing the conception of a "threshold" (the point at

which stimulation results in a noticeable feeling) by that of a maximum "height," namely, the point at which increase of external stimulus ceases to be followed by noticeable increase of sensation. With each of these values Wundt connects a distinct mental quality. Sensibility to stimulation is estimated by the numerical value of the threshold, varying inversely with its magnitude. Receptivity for stimuli, on the other hand, corresponds to the position of the maximum height, varying directly with the numerical value of the same. Thus a person in whose case the threshold of a given order of sensibility was very low and the height correspondingly great would be said to possess both great sensibility and a high degree of receptivity for impressions. Wundt, rightly as we think, finds the full psychological significance of Fechner's law in the fact that in comparing feelings, whether as to quantity or as to quality, we have in general not an absolute but only a relative measure. The magnitude of any sensation is necessarily appreciated in relation to the antecedent feeling from which it is a transition.

A chapter on the quality of sensations states in a very clear and succinct manner the latest knowledge respecting the anatomical and physiological conditions of the several orders of sensation. Wundt here controverts very fully Müller's doctrine of specific energy, contending that the qualitative differences of the visual, auditory, olfactory, and gustatory sensations depend not on any fundamental peculiarities of the respective groups of nervous fibres, but exclusively on the peculiar terminal apparatus attached to these, that is to say the peripheral expansions of the fibres into the rods and cones of the retina, the organ of Corti in the cochlea, and so on. This question of specific energy, to which Wundt devotes considerable space, will receive a fuller investigation further on in the article. The author seeks to determine precisely the mutual relations of the senses, with reference both to the nature of their stimuli and to the characteristic qualities of the feelings themselves. Thus it is well shown that sight, though it is to be ranked with hearing in the fineness and stability of its discrimination and classification of sensation, resembles the senses of smell and taste in so far as it lacks that power of responding differently to the slightest difference of the external stimulus which belongs to the sense of hearing; and this affinity is supposed to be connected with the fact that in hearing as in touch the mechanical movement of the stimulus is transported *immediately* to the terminal structure of the nervous fibre, whereas in sight, as also in the chemical senses, the movement of the stimulus in its transference to the nervous extremity is transformed into some other form of movement. Wundt considers it

to be a legitimate supposition that in sight, as well as in smell and taste, the mechanical process passes into a chemical one. The phenomena of the two higher senses are discussed with great fulness, and the views of others, more especially those of Helmholtz, are subjected to a painstaking criticism.

Wundt completes his account of the sensations by devoting a chapter to the nature and conditions of the "sensuous feelings" *(sinnliche Gefühle)*, that is to say the several emotional shades of sensation, including pleasure and pain, together with certain effects more or less analogous to these as the feelings of the restful, the exciting, and of the cheerful and the gloomy. These subtle shades of feeling which accompany the sensations of the ear and the eye and enter so prominently into æsthetic impressions are defined with considerable ingenuity, even though one has to admit that the writer is here treading on a somewhat slippery ground, for which the strict methods of physiological science are scarcely fitted. With respect to our feelings of pleasure and pain, an ingenious though rather forced attempt is made to demonstrate a uniform relation of emotional quality to intensity of sensation in the case of every sense. Wundt conceives that with increase of stimulation there is a gradual rise through degrees of the pleasurable to a point of indifference, beyond which there is a rising scale of the painful. The case of sensations which appear to be painful even in their feeblest degrees, for example, certain well-known sensations of smell and taste, is disposed of by the supposition that in these instances the point of indifference is scarcely higher than the threshold of sensation, so that the scale of the pleasurable is contracted within such narrow limits as to be unrecognisable. That is to say, Wundt conceives that the points of maximum pleasure, indifference, &c., have very different heights in different classes of sensation.

The next section on *"Vorstellungen"* (*i.e.*, Presentations and Representations) brings us into a region of psychical phenomena where it is much less easy to apply the exact and certain methods of physiological science. Still the author succeeds in throwing a good deal of new light on this subject by making use of the most recent objective experiments. The whole question of the nature and origin of our ideas of space, which occupies a considerable part of this section, we hope, as we have said, to deal with in another article. Suffice it for the present to say, that Wundt distinctly connects himself with the "empiristic" party, giving great prominence to the feelings of innervation (which is but another name for Professor Bain's feelings of expended energy), as a main factor in the synthesis by which our space-intuitions are built up. The author enters

too very fully into the relations of our musical system, and discusses in a very suggestive way the subjects of tone-relationship, key, musical rhythm, &c.

A chapter of this section which deals with the representations of the imagination shows a wide acquaintance with the facts of hallucinations, and in the psychological use which it makes of the phenomena of mental pathology may be compared with M. Taine's treatment of this subject in his interesting treatise *On Intelligence*. The physiological basis of hallucination is reasonably supposed to be a more energetic central impulse than that of normal fancy and of memory, which impulse reaches the peripheral regions of the senses, and so approximates to the nervous process of perception. Wundt has also some valuable suggestions for explaining many of the seemingly arbitrary associations which present themselves in dreams. In another chapter on complex representations, he attempts to trace the psychological genesis of abstract ideas, and to assign their physiological correlatives, and is naturally led to criticise Kant's doctrine of subjective forms, both of intuition and of the understanding.

The following section headed "Consciousness and the reciprocal action of Presentations" constitutes perhaps the most stimulating reading in the two volumes. The whole subject of the nature and limits of distinct consciousness, including its physiological conditions, is worked out with much originality, though the author here as in some other places betrays a rather dangerous tendency to wander into the unscientific bypaths of metaphysical speculation. The precise nature and the physiological mechanism of voluntary Attention receive a great deal of new light from a group of experiments of the highest interest, of which it may not be too much to say, that they will be new discoveries to nearly every psychological student in this country. Into this part of Professor Wundt's work we shall have to look rather closely presently. The discussion of attention in its operation on intellectual states is followed by a chapter on emotional operations *(Gemüths-bewegungen)* which will be curious to English readers as following in the wake of the other German psychologists in their treatment of this subject. Thus, for example, the old distinction between the feelings and the passions *(Affecte)* is retained, and the impulses of desire and aversion are treated as forms of emotional agitation. The most original feature in this chapter is an attempt to deduce some of the characteristic effects of passion from the overpowering action of emotional excitement on attention. To this point we shall return when expounding the author's theory of attention.

The last section of the work is devoted to an exposition of the several orders of bodily movement, including those of emotional expression. Here the subject of volition and freedom naturally comes in for discussion. The author finds it easy to refute the notion that motives, regarded as invariable quantities, are the whole cause of action, and lays great stress on the natural basis of individual temperament and *character* as an important factor in volition. He finds the true relation of voluntary to reflex movements to be not that the latter fall under the category of causality which the former dispense with, but that while the latter have only an external and physiological determination, the former have both a physiological and a psychological. But is this last an essential step in the process? Here Wundt distinctly meets the supposition of automatism which, oddly enough, is just now talked about in this country as though it were a quite new hypothesis.

In treating the subject of emotional expression, Wundt finds occasion to offer some valuable criticisms on the theory of Darwin. Wundt himself reduces the laws of expression to three principles, namely, those of the direct change of innervation, which answers to Darwin's third principle, and is defined as including the immediate reflex effect (*Rückwirkung*) of the strong emotion on the central parts of motor innervation, the association of analogous sensations, and the relation of movement to the conception of the senses, as illustrated in all mimic gestures, &c. We agree with Wundt in rejecting Darwin's principle of contrast, but we fail to find in this new attempt to define the principles of emotional expression an exhaustive treatment of the subject.

In this rapid survey of the contents of Professor Wundt's two volumes, we have been able, we trust, to show how full and varied is the interest which it offers to the psychological student. Even where the writer fails to exhaust a topic and to supply an adequate explanation of a problem, he renders a valuable service by presenting the subject under some fresh and striking phase, and, in not a few instances, by raising a new problem for future investigators. When to this we add that many of the discussions are supplemented by clear and often ingenious criticisms on preceding theories, more especially the doctrines of the two great leaders of pyschology in Germany, Kant and Herbart, the reader will understand how valuable a treatise is here presented to the student of mind. We will now seek to illustrate still further the importance of Wundt's work and of that department of German research with which it is connected, by entering more fully

into two of the most original passages of the book. The first of these is the author's peculiar treatment of the principle of the specific energy of the nervous structures; the second is his fresh and striking account of the processes of attention on their mental and physical side.

The theory of the specific energy of the nerves was, as we have remarked, first built up by J. Müller, who thought by means of this idea to supply a physiological basis for Kant's doctrine respecting the subjective conditions of knowledge. The facts on which it reposed were the following. First of all the several orders of sense-nerve have stimuli peculiar to themselves which do not act on the other orders. Thus the optic nerve has ether-vibrations as its proper stimulus. Secondly, every nerve of sensation reacts on the stimuli common to the several orders of nerves (mechanical and electric agencies) only in the form peculiar to itself ("specific" form). But, in fact, as Wundt points out, the first of these propositions does not hold for the most extended class of nerves, those of the skin, since these lack a special stimulus, and are only acted on by a common mode of stimulation (mechanical action).

With further knowledge respecting the nervous structures, Müller's doctrine of specific energy had to be modified. The form which this theory now commonly took was that the qualitative differences among our sensations depend not so much (if at all) on specific differences in the conducting fibres as on specific peculiarities in the central terminations, namely the cerebral ganglionic cells. The nervous fibres were now spoken of as like electric wires which produced the most various results according to the different apparatus attached to them.

Against this form of the theory Wundt directs his argument, contending that the various elements of the centres no less than the connecting fibres are "functionally indifferent," being able, *per se*, to react just as well in one way as in another, and that the qualitative differences in our sensations depend exclusively on the peculiar forms of the processes set up in the fibres. These forms are mainly the result of the peculiar terminal organs attached to the peripheral extremities of the fibres, such as the rods and cones of the retina, the organ of Corti in the cochlea, &c. No greater differences of structure are discoverable in the central elements than in the peripheral nerves. The connecting fibres are indistinguishable in structure, and as to the ganglionic cells their differences refer simply to magnitude, form, and the mode of origin of their processes. The phenomena of vicarious action, by which one part of the central tissues does duty when another part is incapacitated, and which so frequently recur in pathological

observation and in physiological experiment, seem to indicate the fundamental similarity of the central structures as to functional capacity.

Wundt holds, then, that no nervous element, whether fibre or cell, has for its specific function the production of one order of feeling, but that a given variety of feeling is correlated with a definite variety of neural process, which process might as well take place in one fibre (or cell) as in another. The reason why one species of feeling is commonly produced by one set of fibres and cells, is that the form of process appropriate to this feeling is customarily carried out along these particular lines, and this is owing to the peculiarity of the various peripheral endings. Thus the reason why the excitation of a certain group of sensory cells is accompanied with a sensation of sound while that of another group is accompanied by a sensation of light, is to be looked for not in any specific differences of these cells or their connected fibres, but solely in the difference of form in the two series of molecular movements transmitted to the two groups.

The greatest difficulties in the way of the hypothesis of specific energy are to be found, says Wundt, in dealing with the qualitative differences of feeling among the sensations of the same sense. He enters very fully into the question whether the several sub-varieties of the sensations of colour and of tone are dependent on specifically different sets of nervous fibres in the two organs concerned, or whether they are connected with different forms of molecular movement in the same fibres. It is known that Helmholtz, reviving a hypothesis of Thomas Young, supposes that in the retina there are three sets of optic fibres corresponding to three classes of elementary sensations, —namely, those of red, green, and violet, or blue. Again he formerly conceived that the fibres of Corti, which constitute one of the terminal structures of the auditory nerve, are a kind of key-board, each filament being set in motion only by series of vibrations which have an approximately equal rapidity, and so subserving exclusively sensations of tone of nearly the same pitch; and he still supposes that the fine gradations of pitch which the ear is able to distinguish depend on a simultaneous excitation of contiguous fibres in different degrees. Wundt rejects both of these hypotheses. With respect to the eye, he urges that anatomy offers no solid basis for three unlike classes of optic fibre. He also lays stress on the fact that the eye is unable to analyse sensations of colour into their supposed elements. But his main objection is based on the fact that the smallest visible point of light is never perceived as a particular colour. Hence, he argues,

even in seeing the *minimum visibile* the three hypothetical sets of fibres must co-operate. But this seems to be irreconcilable with the known diameter of the rods, each of which is supposed to be continuous with a primitive fibril. The difficulties with respect to the ear are, Wundt thinks, still greater. He maintains, in opposition to Helmholtz, that a simultaneous excitation of two adjacent fibres would result not in a single intermediate tone, but in the two tones answering to the fibres, and that therefore, since our sensations of tone constitute a *continuum*, the hypothesis of definite pitch-fibres would require an infinite number of nervous threads.* Wundt contends further that to postulate differences of fibre for qualitative differences among the sensations of the remaining senses, as taste and smell, is distinctly opposed to the teachings of anatomical science. We would direct the reader to Wundt's elaborate arguments on the whole subject, which are too long to be given here in detail. It is obvious that if Wundt's interpretation of the facts in this instance is correct,—and we confess that the cumulative effect of his arguments is very considerable,—we have proof positive that within certain limits at least a variety of stimuli acting on the same nervous elements produces qualitatively distinct sensations. And this is a powerful argument for Wundt's whole theory of the nervous conditions of quality of feeling.

But how, it will be asked, is Wundt's doctrine that quality of feeling depends solely on form of stimulation to be reconciled with the fact that definite groups of fibre, *e. g.* those of the retina, respond only in one way, whatever be the stimulus acting on them, and with the further fact that after the peripheral terminations of the fibres are removed, as in the case of the loss of the two eyes, the stimulation of the truncated nerve is always followed by the mode of sensation peculiar to it in its normal condition? Wundt seeks to get out of this difficulty by postulating an "extraordinary capacity for self-adaptation to stimuli" (p. 351) in the nervous substance. The optic fibre, after having been acted on in innumerable instances by the stimulus of light, has its molecular arrangements so adapted to this particular variety of stimulation that it cannot be acted on by any form of stimulus, at any point in its course, except in this one mode. Wundt thinks this view of the matter is supported by the fact that the function of an organ of sense must be sustained through its appropriate

* It is rather odd that Wundt does not call attention to the fact that Helmholtz's supposition of certain fine differences in sensation of tone depending on varying proportions of activity in the same two fibres is *pro tanto* an admission of Wundt's point.

external stimulus for a certain period, if the form of feeling peculiar to the organ is to survive the loss of the organ. Thus it is a familiar observation that those born blind and deaf lack absolutely the sensations of light and sound, whereas those who have become blind and deaf retain their sensations in the form of dreams, recollections, etc., for many years.

It would thus appear that Wundt's theory is not in reality so very different from the older doctrine which it seeks to supplant. He admits in effect that in the present stage of organic development the nervous fibres have something indistinguishable from a specific function, since they can only respond to stimuli in one particular way. Not only so. Difference of function will be followed, sooner or later, by difference of structure, and it appears to follow from Wundt's theory that the optic fibres and their connected cells, for example, must have become structurally unlike the other classes of sensory fibres and cells, though anatomical observation has not as yet succeeded in detecting any characteristic differences.

Wundt claims for his theory of nervous action the advantage of being the "more conceivable psychologically."

"We can," he says, "easily represent to ourselves that our consciousness is qualitatively determined through the nature of the processes taking place in the organs which sustain it; but it is difficult for us to conceive how this qualitative existence is to become changeable merely with the *local* differences of those processes."—(pp. 353, 4.)

This consideration seems to us to be a little forced, since the supporters of the doctrine of specific energy have referred the peculiarities of function not to mere local arrangement, but to undiscovered peculiarities of structure in the nervous elements themselves, whether fibres or cells. On the other hand, it may well be contended that, in distinguishing two perfectly similar impressions, *e.g.* two points of light, the only physiological basis for such distinction is the local separation (though not the local *arrangement*) of the elements concerned. All that is required for "psychological conceivability" is that to difference of feeling some difference of neural process should correspond; and this requirement is equally satisfied, whether two like processes take place in different elements, or two unlike processes in one and the same element.

In concluding this account of Wundt's theory of nervous action, we would remark that its principal significance lies in its bearing on the hypothesis of evolution. It distinctly points to a gradual differentiation of nervous tissues having unlike functions. Wundt's merit lies in the fact that he has sought with

considerable success to transform the old theory of specific energy, so as to harmonise it with the latest biological conceptions.

The subject of specific energy, on which we have just dwelt, is mainly a physiological one; we will now pass to Wundt's treatment of a more properly psychological subject,—namely, the nature and laws of Attention.

Wundt begins his discussion of attention by a provisional definition of consciousness, with which we need not here concern ourselves. He distinctly rejects the idea of "unconscious mental states" awaiting the process of reproduction. On the other hand, he draws a sharp line between clear and obscure consciousness, recognising varying degrees of each both in one and the same mind, and also in the scale of animal intelligence. The circle of distinct consciousness is determined by the process called attention. Wundt draws an analogy between this region of attention and the field of distinct perception in vision, and makes use of the terms "field of view" and "point of view" to illustrate the distinction between all the presentations at a given moment and that part of them to which attention is directed.

The entrance of a presentation into the internal field of view is termed a Perception; its entrance into the point of view, an Apperception. The analogy between the inner and the outer point of view lies in the fact that each moves successively over the different parts of the field of view. On the other hand, the inner point differs from the outer in the property of alternately expanding and contracting (its degree of illumination varying inversely), so that, strictly speaking, it is not a point, but a narrowly circumscribed though variable surface. The narrower and brighter this inner "point," the greater the obscurity of the remaining field. This is well illustrated with respect to objective attention, in the effects of a momentary visual impression by electric illumination, which show further, what might be expected, that the extent of this point of distinct consciousness increases with increased duration or with frequent repetition of the impression.

The influences which lead attention in this or that direction are either external or internal. By the former Wundt understands strength of impression, &c. One condition of recognising a particular element in a complex impression is that this element should have been experienced apart shortly before. In this way we can "pick out" in a composite mass of tone notes which we have just heard separately. By internal conditions Wundt means the influence of memory and anticipation in recognising impressions. Thus in examining a fresh mineral

specimen, which, as we conjecture, is of a particular variety, we form a distinct image of some remembered specimen, and by help of this recognise the specimen now before us. Subjective observation shows that wherever attention comes into play, this kind of activity is involved.

Attention is known to be accompanied with a feeling of tension either in the organ of sense engaged, or, as in the case of voluntarily controlled reminiscence, in the head. In both cases the feeling results from the innervation of the voluntary muscles, which is accompanied by an actual tension of the muscles, and in consequence of this, through altered pressures on the skin, by peculiar feelings of touch. Further, when external impressions are anticipated, the feeling of strain in attention is found to depend on the strength of the impressions.

These phenomena show that attention accommodates itself to the particular impression of the moment. The agitating effect of surprise is due to the fact that attention has not accommodated itself at the moment in which the impression is received. This accommodation is of a two-fold kind, having reference both to the quality and to the intensity of the stimuli.

And what, it may be asked, is the mechanism of this process of apperception? When attention is awakened, we must, says Wundt, imagine the following order of events:—

"The first impulse follows in every case either through an external (physiological) or through an internal (psychical) stimulation. Such a stimulation has as its immediate consequence a presentation, whether an image of intuition or one of imagination; and this in the first instance lies outside the internal 'point of view.' Every sensory stimulation, moreover, is at the same time transmitted into the central regions of voluntary innervation, from which, as we conceive, it is capable of being conveyed further in one of two ways, either first of all back again to the sensory domain, whereby the conception is strengthened, or secondly to the domain of the voluntary muscles, whereby those muscular tensions arise which help to form the feeling of attention, and which on their side react on attention, strengthening it, according to the law that associated feelings support one another. In the predominant reaction on the sensory tracts, from which the process originally set out, consists essentially the difference between attention and voluntary movement. In the case of the latter the central stimulation is mainly directed to the muscles, which during the processes of attention are only drawn into a subordinate co-movement. Yet both processes are of course connected in many different ways, since the voluntary movements throughout shape themselves according to the presentation which occupies the point of view of consciousness."—(p. 723.)

Wundt appeals in confirmation of this theory respecting the reaction of the tracts of motor innervation on the sensory domain to the common fact that by sheer force of will, we can call up feelings scarcely distinguishable from vivid impressions.* His main argument for this theory, however, is derived from a curious series of experiments, to the consideration of which we will now turn.

These experiments aim at determining the duration of the processes involved in recognising a momentary external impression, and in recording this recognition by a simple voluntary movement, and they aim further at discovering what variations in this duration are brought about by variations in the impression and its attendant circumstances. They are of an extremely curious and interesting character, and have proved in the hands of Wundt fruitful of psychological interpretation.

The several steps of the process here studied are thus marked off by Wundt: (1) the transition from the organ of sense to the brain; (2) the entrance into the field of view of consciousness or perception; (3) the entrance into the point of view of attention or apperception; (4) the action of the will in giving the necessary impetus to the motor nerves; and (5) the transmission of this motor excitation to the muscles. The first and last of these stages are purely physiological. As to the remaining three processes, that of perception may reasonably be supposed to be simultaneous with the excitation of the sensory regions, so that its duration is included in that of the process of sensory conduction. If we speak of a perceptional period, we can only mean the time required for the movements transmitted to the sensory centres to produce the necessary excitation there. Similarly, the volitional period (No. 4) must be looked upon as psycho-physical, it being highly improbable that the action of the will is a separate action occupying a distinct time. There remains the apperceptional period, which is also psycho-physical, since we can speak of it either as the time required for the transformation of a perception into an apperception, or as the interval needed for the transition of movement from the sensorium to the cortical portion of the cerebrum. The whole period thus divided, Wundt, following the usage of astronomers, terms the physiological time. Since in many cases we cannot

* The writer of this article may be allowed, perhaps, to remark that without any knowledge of Wundt's speculations on this subject, he himself suggested that the phenomena of voluntarily awakened subjective sensations distinctly point to a reaction of the voluntary process on the sensory tracts. See *Sensation and Intuition*, pp. 63, 64.

separate the apperceptional and the volitional periods, we may speak of them as one under the term reactional period. In this way we shall have four steps in the process, two purely physiological, the first and the last, and two psychological or psycho-physical, those of perception and reaction. There is every reason to believe that the two latter occupy a much longer time than the two former. Hence when the whole physiological time undergoes considerable alterations, we must refer it to changes in the duration of these central processes. The experiments by which the varying values of the physiological time have been determined were originated by Bessel in his investigations into the personal equation in astronomical observation. They have since been further developed by several *savants* in the interests of physiological science, including Hirsch, Donders, De Jaager, and in a special manner by Exner. The ingeniously constructed apparatus (chronoscopes) by which these observations have been made are fully described by Wundt in an appendix. Here it is sufficient to say that by help of electric currents they give a wonderfully precise record both of the fraction of a second, at which the impression of light or sound takes place, and of the interval between this and the completion of the act of manual registration by which the impression is recorded.

The experiments to be considered fall into three series: (1) those which investigate the physiological time under the simplest conditions, that is, when the observer (who records his impression) is expecting an impression of a certain quality and strength, but is uncertain as to the precise moment of its arrival; (2) those in which a change of the physiological time is effected by the addition of the favourable circumstance that the exact time of the impression is known beforehand; and (3) those in which the physiological time is modified by the introduction of some unfavourable circumstance, as for example, that the nature of the impression is unknown, or that the kind of movement to be carried out in the act of registration is made to depend on the character of the impression, and cannot therefore be prepared for in the same manner.

We cannot attempt to give more than some of the most interesting results of these experiments. Thus, for example, Wundt found that under the conditions imposed in the first kind of experiment, the duration of the perceptional and apperceptional processes is a constant quantity for all orders of sensation *at the threshold of stimulation*, the whole time occupied here being of course considerably longer than that required in the case of more powerful stimulation. Further, he found that when considerable changes are made in the force

of the stimulus the physiological time decreases with the increase of this force, but that when very slight changes were introduced, this rule did not hold. The author concludes therefore, that within these narrow limits the effect of increase of stimulation in shortening the whole process is evanescent as compared with the effect of the varying influences of the condition of attention at the moment. He argues too, that the increase of rapidity with increase of stimulus, must be referred mainly, though not exclusively, to the psycho-physical stages of the process.

In the second series of observations in which the time of the impression is pre-announced by a signal, Wundt found that with repetition of the experiments under precisely the same conditions the physiological time decreases till it reaches an infinitesimal quantity, or vanishes altogether. That is to say, the act of registration perfectly synchronises with the application of the sensational stimulus. Wundt accounts for these rather startling results by the supposition of a "preparatory strain (*Spannung*) of attention." Where the physiological time becomes very small we may infer that the observer's attention has so well accommodated itself that the apperceptional period vanishes and apperception and volitional excitation become co-instantaneous with perception. Where the physiological time reaches zero, Wundt imagines that the observer is involuntarily seeking to make the act of registration exactly synchronise with the arrival of the impression, and in doing so is necessarily guided by a feeling for the perfect contemporaneousness of the impression to be observed and the feelings of innervation and touch which accompany and announce, so to speak, the act of registration.

Suddenness of impression increases the physiological time very considerably, probably through the retardation of the reactional processes which cannot now be prepared. In the case of a faint, sudden, and wholly unexpected sound, the physiological time reached the great magnitude of half a second. If instead of rendering the impression unforeseeable, the procedure is complicated by leaving the act of registration unknown beforehand, the physiological time is similarly lengthened. This fact points distinctly to the existence of a *volitional* period. The length of this period moreover is found to depend on "the physiological connections in which the central sensory regions stand to the reacting motor apparatus." These connections will obviously be determined in part by the external order of impressions, as is illustrated in an experiment of Donders, which shows that visual signs are less closely associated with vocal action than are auditory signs.

We can only just glance at some of the more complicated experiments here enumerated by the author. It is found that when the impression to be recorded is accompanied by an interfering or distracting side-impression, whether continuous or momentary, the physiological period is lengthened. The disturbance of such a side-impression moreover is greater when this is heterogeneous to, than when it is homogeneous with, the main impression. Thus a sound distracts the mind from the observation of a light-impression with a greater force than another visual impression would do. The physiological reason of this difference is too obvious to require naming. In the case of momentary distracting impressions occurring immediately before the impression to be registered, it is found that within certain limits the actual order of the impressions may be misapprehended, so that the anticipated impression is observed as co-existent with, or even as prior to, the disturbing element which it in reality succeeds. The fact that in watching a bleeding operation a person sees the blood spurting before the insertion of the lancet is a familiar example of this curious fact. Other interesting results follow when the distracting impression is made to succeed the main impression by a very small interval. If the interval be less than a certain magnitude, and the disturbing impression be of a certain strength, the main impression is extinguished, so to speak. The apperceptional energies are called off by the second impression before they have had time to form a distinct intuition of the first.

It is proved by these experiments, says Wundt, that the precise point of time at which an impression is apperceived depends in a very curious way on the amount of preparatory self-accommodation which the attention has undergone. If a clear and vivid image of the impression be formed beforehand, and if the interval between the revival of this image and the recognition of the actual impression be sufficiently small, then the image and the impression are no longer distinguished, and the instant at which the former recurs is taken for the moment of the reception of the latter.

It is also established by these experiments that attention does not in most cases possess the power of grasping two impressions at the same instant. Where two impressions are simultaneously apperceived, it is because they are such as can be brought under one complex impression as parts of a whole. Further, the activities of attention require a certain interval of time in order to pass from one impression to another. Wundt says that two impressions which owing to the after-effect of the first are perfectly continuous are nevertheless perceived as

two distinct impressions. In this way, he argues, the laws of attention affix a certain discontinuity or discreteness to the flow of our impressions and ideas.

The most comprehensive and important conclusion which Wundt draws from these experiments is that the operations of apperception and volitional reaction are "one connected process," the physiological seat of which is the domain of central motor innervation. Both apperception and the impulse to voluntary movement "are only different forms of volitional excitation," which has its rise in the anterior regions of the cortical substance. Thus these anterior regions are in a double sense the highest, since they not only subserve the regulation of all the most complicated actions, but also assist in the control of the sensory regions themselves.

The author seeks, as we have before mentioned, to apply this conception of attention to the principal phenomena of violent emotion. He thinks the simplest type of an emotional "*Affect*" is given in the action of a sudden impression. A similar result follows when the impression is so powerful as speedily to exhaust the activities of attention. This is illustrated in the case of the asthenic or prostrating emotions. "Passion streams over and finds vent for itself in energetic movements, in those moments in which apperception commands the impression; it acts in a paralysing manner when either the impression suddenly overpowers consciousness, or when consciousness is exhausted by long conflict with the passion." (p. 805.) Wundt thus refers the bodily movements which accompany strong passion to the energetic excitations of the central motor tracts which form the organ of apperception and voluntary movement, and the wearing effect of certain orders of passion, as terror, to an exhaustion of the energies of these motor tracts.

We cannot say we think this attempt to reduce the bodily effects of emotion to mediate effects, namely those which are due to the action of impressions on attention, to be successful. It seems to be contradicted by the fact that the most energetic emotional movements take place in the absence of everything like a consciousness of an exercise of attention, and overlooks the psychological fact, that emotion, as something distinct both from sensuous impression and from volitional impulse, is a species of bodily excitement which shows itself conspicuously in the muscular activities, but which betrays its presence in heightened sensibility quite as much as in increased motor activity.

But passing by this particular application of Wundt's theory of attention, we can confidently say that it constitutes a very

important advance in our knowledge of the real processes of volition, and helps us to understand by what mechanism the mind consciously turns its attention to an internal idea and through a voluntary concentration of its forces, facilitates the processes of sensuous perception. It is the part of the treatise which the psychological student can least of all afford to overlook.

JAMES SULLY.

IV.—CONSISTENCY AND REAL INFERENCE.

IT would not be going too far to say that the principal difficulty in the way of a student of Logic at the present day (at any rate in England) consists not so much in the fact that the chief writers upon the subject contradict one another upon many points, for an opportunity of contradiction implies agreement up to a certain stage, as in the fact that over a large region they really hardly get fairly within reach of one another at all. To quarrel upon specific points people must have at any rate some principles in common; where this is not the case, they have little else to do than to make up for the vagueness of their dissent by the vigour with which they give expression to it. Much of the consequent confusion can, we are convinced, be easily allayed by a simple process of intercomparison, provided only the various systems be referred to their leading principles of distinction. In adopting such a plan we need make no apology for confining our attention to the most popular and familiar writers on each side; indeed for such representative purposes they are distinctly the most suitable. But, at the same time, it must be understood that though nominally comparing authors, we are really comparing systems.

That we have not overrated the magnitude of the divergence between the various systems will be evident from a very few extracts and quotations. Hamilton, by implication rather, and Mansel, formally and explicitly, deny that the subject-matter with which Mill is occupied deserves the name of logic at all; they regard it as being nothing more than a somewhat arbitrary selection from Physical Science. Mill in turn gives equally conclusive indications from his side. He declares, when discussing the import of propositions, that the Conceptualist view is "one of the most fatal errors ever introduced into the philosophy of logic." Elsewhere he gives criticisms which amount to the retort that those who adopt that view are making logic nothing more than a somewhat arbitrary selection from Psychology.

Before proceeding to work out this distinction into some of its details, let us go back, so to say, to the watershed whence the different views as to the nature and province of logic must take their rise. Every one, it is to be presumed, will admit that a proposition is a statement in words of a judgment about things.* Without the words it is pretty generally agreed that there could be nothing more than the merest germ of thought, if even that; without the judgment expressed by it, it would clearly not be the appropriate action of a rational being; whilst without the reference to things it would, of course, fail in its main object of communicating knowledge, nor could there be any question raised about its material truth or falsehood.

Now, each of these three sides of the proposition might conceivably be selected as that which is distinctly characteristic of it, to the exclusion of the others; and since the proposition by analysis leads to terms, and by synthesis to arguments, what holds of the proposition holds equally throughout the entire field of logic. Hence we should apparently be led to three alternative views as to the general nature of logic. One of these views, however—namely, that which lays the stress on the words in which the judgment is couched—need hardly be discussed. It has indeed been maintained by Whately that logic is concerned with language, and with language only. But he does not adhere to this limitation, as indeed no clear thinker could, for the secondary and dependent nature of language as being a medium of thought, or having reference to facts, is far too prominent to be disregarded. Hence it follows that supporters of this view are under such powerful attraction to one or other of the remaining two, that for all practical purposes we need not take any but these into account.

Beginning then with the Conceptualist view, that is, starting with the judgment as above indicated, we must, of course, take, as the element of the judgment, the concept, for this only belongs to the same, namely, the mental order or stratum of things. The concept and the judgment are, so to say, on the same plane; they are homogeneous and comparable the one with the other, whereas to mingle names or propositions with them would be to mix up disparate things.

It may be admitted at once that this view has simplicity as a merit; but let us just see to what lengths and sacrifices the determination to adhere to it will lead us. Taking the concept,

* The reader is reminded that we are confining our attention, not entirely to English logicians, but to those who may be considered as influential here. No Hegelian, I presume, would consider what we have taken as our starting point to be in any way deserving of such a name.

which may be best defined as the mental* counterpart of a general name, we say that this is the real element of the judgment, that the judgment consists of two concepts standing in some sort of relation to each other. So long as we are concerned with general names, this will carry us on tolerably well; but how are we to treat *singular* names? Most people would say that these refer directly to individual objects, that this and nothing else than this is their meaning. But the Conceptualist sometimes hesitates to say this, for to do so would be to make a dangerous approach towards subordinating the form to the matter. Accordingly the consistent thinker (and in a question of consistency it is, of course, to Mansel rather than to Hamilton that we turn) abolishes individual terms altogether. He goes the length of asserting that every proper name is a concept, which is perfectly general in its intrinsic character like all other concepts, and that if it does happen to fit only one individual in the course of time, this is a mere historical fact, and therefore alien to the logician's consideration. By so saying, he may be presumed to mean that my mental representation of any given individual, say Socrates, can contain only a limited selection of attributes; that this limited group might possibly be found to recur again elsewhere; that, if it did do so, we should not then be able to discriminate between the two without a fresh resort to the individuals themselves with a view to obtain fresh attributes for the purpose of distinction, and that to do this would be to go outside the concept, in other words, to transgress into the matter instead of keeping to the pure form.

Again, it must have struck many readers that the Conceptualist logicians make little or no reference to *belief*. The reason of this is not far to seek. For one thing, belief cannot but have some degree of reference to external objects, and with them no communication whatever is to be held, except, of course, as the original materials or data of thought. For another thing, when, as here, we are only occupied with necessary inferences, nothing but full belief, absolute or conditional, can intrude itself, and therefore we really need not attend to it at all. It need not come before us here, any more than before the pure mathematician; for, like him, we are only concerned with what follows from, or is consistent with, something else. Provided the links are necessarily connected together, we do not care how the chain may be fixed at either end. It is only when we deal with Induction and Probability

* We are admitting for purposes of discussion the tenability of the Conceptualist doctrine—that is, we are not rejecting the psychological theories or assumptions upon which it rests.

and the delicate questions raised as to whether there is or is not sufficient ground for belief, that this consideration of belief is raised at all. Accordingly any distinction between real and imaginary notions is rejected, the only distinction recognised being that between the possible and the impossible, the former including every notion (whether or not there be things corresponding to it) which does not involve actual self-contradiction, and the latter those which do involve self-contradiction.

Again, Classification, in any shape deserving that name, disappears, for it cannot be carried on without some observation and comparison of the objects to be classified. What takes its place is Division, for this is really classification confined to purely formal conditions. But even against this objections may be raised. The only way in which we can divide a class is by separating it into those members which do, and those which do not, possess some attribute; but we clearly cannot tell whether things do or do not possess any assignable attributes except by examination of them, and in purely formal logic this is precluded. It is quite true that division by dichotomy is formally valid, for, whatever be the nature of A, a thing must either be A or not-A. But then, as Mansel objects, what makes us think of A rather than of any other attribute in relation to the thing in question? Hence, though dichotomy in general, as a principle of division, is sound enough, it has nevertheless to be abandoned, because every particular application of it is suggested by reference to the objects and consequent knowledge of their properties, and of this the pure logician is jealous to the last extreme.

The treatment of Induction moreover is simplified. That any process so narrow and unproductive as the so-called Perfect Induction, should have acquired that name, and have been accepted on its own merits, is hard to believe. But when the general theory from which it follows is adopted, the question assumes a very different aspect. Let us resolve to stick to the analysis and composition of concepts, and this perfect induction, poor as it is, is the best we can attempt. It does not demand any resort to external nature, any fresh resort that is, the concepts originally set before us being sufficient for our purpose. It is as near an approach therefore to ordinary Scientific Inductions as can be attained by formulæ which are to hold true whatever be the nature of the particular subject matter to which they are applied.

The foregoing remark will serve to indicate the nature and extent of the divergence between the two opposed views, but something must now be said upon the two designations, Formal and Conceptualist, which are frequently used as practical

synonymes to express them. These terms are obviously distinct in their original significations. "Formal" has reference to the *limits* of the subject rather than its actual nature. It reminds us that we are confining ourselves to those mental processes, or parts of processes, which are independent of the particular subject-matter, that is, in other words, which follow from the mere form of expression. "Conceptualist," on the other hand, refers rather to the nature of our subject than to its limits; it reminds us that we are occupying ourselves with the consideration of concepts or general notions as distinguished from external phenomena. The two terms are not indeed in strictness synonymous, nor need the principal doctrines implied by them be necessarily held together. Whately, for instance, is a thorough formalist, but he shows no predilection for the conceptualist doctrines.

It is true, on the other hand, that the consistent Conceptualist is under powerful inducements to adopt the formal view, partly on grounds of rigid sequence, but still more on grounds of psychological sympathy. Those who have for any reasons determined to confine themselves to the manipulation of concepts, will naturally recognise a deep and important distinction between those mental processes which do not, and those which do require us to go outside the concept for fresh matter in order to carry them on; that is, in other words, between those processes which are, and which are not, formal. Add to this the fact that those who occupy the conceptualist standpoint are, as a rule, those who believe in necessary laws of thought as an ultimate fact (a connection arising out of psychological grounds into which we have not space to enter here), and we see an additional reason why they should make a sharp distinction between the two classes of processes, respectively, which are, and which are not, formal. The distinction between formal and material, if admitted, cannot but be of some importance in any case, though it be little more than a distinction of method; but in the case in question it gets taken up by, and resolved into, the far more important distinction between what is *à priori* and what is merely empirical, and there are therefore additional and far stronger reasons for adhering to it.

If we now turn to the opposite or Material view of Logic, we find a similar series of mutually connected characteristics. Passing over some of those points which have been sufficiently illustrated already by contrast, let us come to that which admirers of Mill will generally regard as his strongest claim to originality, viz., his peculiar doctrine of the syllogism. We think that we are detracting little, if at all, from his merits by saying that this doctrine seems the natural, simple, and almost

necessary outcome of the general view of logic which he has adopted. It is, in fact, upon his consistent following out of this view, rather than upon this or that conclusion in particular, that we should rest his real claims to high distinction.

His explanation of the syllogism will be arrived at most simply by referring first to what he says about the nature of the so-called immediate inferences. It may have struck some readers as noteworthy that he refuses to allow them the name of inferences at all. But there is surely a meaning in this, and the disputants on each side are quite consistent in adhering to their own views. Take, for instance, the proposition "All men are fallible;" from this we obtain by a certain series of processes, "Some infallibles are not men." Now regard these propositions as *judgments;* that is, stop short at the mental process of framing the judgment instead of going on to the facts about which the judgment is made, and it can hardly be denied that one of them is an inference from the other. They certainly cannot be called one and the same judgment, considering that they have different subjects, different predicates, different quantity, and different quality. And if they are not the same judgment, the latter must surely be an inference from the former. But penetrate to the *facts* to which these judgments refer, and we see at once that they are identical, or to speak more accurately, the one is a portion of the other. The things are the same, being merely differently grouped, or looked at from a different point of view. The same remarks will apply to another class of immediate judgments which have given some trouble to logicians, for instance, "A is greater than B, therefore B is less than A." Here also the judgments are distinct, whilst the facts judged are identically the same.

Now let us introduce the above distinction into the controversy whether the syllogism is or is not a *petitio principii,* and the dispute seems allayed at once, or, at any rate, its origin and existence are accounted for. The conclusion regarded as a judgment is unquestionably distinct from the premisses so regarded, and therefore from that point of view the ordinary theory seems perfectly tenable. But once let a thinker start with the determination that his propositions shall be regarded as, so to say, bottoming upon facts instead of stopping short at concepts, and there is an obvious incompleteness and difficulty about the old explanation. The conclusion, regarded as an objective fact, *is* the premisses, or rather a portion of them. We are accordingly driven to carry our investigations a step further back, and we then perceive that the only step in the reasoning at which new facts were appealed to, instead of merely new judgments about them being made, was in the formation of the

major premiss. When, from a limited number of observed instances, we generalise so as to include the whole class to which they belong, we are talking and judging about new facts instead of merely varying our judgments about the old ones. Hence Mill's view readily follows, viz. : that it is the major premiss which really contains the whole inference, the remaining part of the syllogism consisting merely in identification and interpretation of what had gone before. As an illustration of the fact that this explanation of the syllogism, original and important as it is, is, nevertheless, that to which a consistent supporter of what we may term the Baconian view of logic, would necessarily be led, it may be pointed out that it has received for instance the support of Dr. Whewell. He is in radical opposition to Mill on fundamental philosophical principles, but agreeing with him on the whole as to the nature and province of scientific logic, he agrees with him in consequence on the point in question.

The foregoing remarks will be sufficient to indicate the nature and extent of the divergence between the two views before us. It would, of course, be far beyond the scope of the present article to attempt to decide between their claims, but something may fairly be said about some of their subordinate merits and deficiencies. For the Conceptualist theory the main recommendation is the extreme simplicity and homogeneity of the resultant system. Whatever is done is completely done. Nothing is admitted as demonstration, but what is (hypothetically) certain. We have none of those results, so dissatisfying to the lover of speculative accuracy, in which no final decision can be obtained by our mere formulæ, but the settlement of the question has to be abandoned to the judgment and skill of the practised observer. This completeness of result is moreover accompanied by a symmetry of treatment which is very fascinating to many minds. These merits are, of course, purchased at a heavy cost. In addition to the philosophical difficulties which the system involves, a large number of detailed objections may be raised against it. After the elaborate exposition of these given in Mill's *Examination of Hamilton's Philosophy*, there is no occasion for us to enter upon them here.

With regard to the defects of the Material view of Logic, those who accept it on the whole will not of course admit that they amount to serious and insurmountable obstacles. Nevertheless, their existence must be frankly admitted. They may nearly all be summed up in the charge of vagueness of outline, and uncertainty of result. We cannot lay down a precise line for the limit of logic and logical treatment in general, as distinguished

from that of the special sciences. In definition we are forced to admit that the connotation of terms does not admit of accurate determination, but varies with usage, and may be almost entirely altered by scientific discoveries. When challenged to state after how many occurrences the repetition of an event may be confidently expected, or how many instances are required to establish an induction, we are obliged to admit that no definite answer can be given, but that it wholly depends upon the nature of the subject-matter. So with classification; this is no process which can be performed by rule, but it imperatively requires that sagacity of observation and judgment which only long practice combined with natural aptitude can secure. These difficulties are inherent in all human experience, and therefore no science which attempts to grapple with the facts of experience can avoid them.

There is, indeed, a special difficulty occasionally experienced by the student which must be regarded as irrelevant. Those, for instance, who begin with Mill are not unfrequently puzzled by his statement that Logic has to do with the facts or things themselves rather than with our ideas about them; and they not unnaturally ask, How can he then be an Idealist? and if so, is he not grossly inconsistent? The answer, of course, is that since the particular opinion which any one entertains as to the nature of the external world does not affect his position when dealing with scientific evidence in detail, it need not affect the position of one who deals with such evidence as a whole, viz.: the logician. It is a question of metaphysics which lies behind all evidence, and leaves it for the most part entirely unaffected, at least by any direct contact. The astronomer who infers that the sun is 92,000,000 miles distant from the earth is not called to account and questioned as to how he reconciles this statement with his metaphysics if he be an Idealist; and the logician may fairly claim a like toleration. If he lays it down that names are names of things, not of our ideas of things, that what is the import of a proposition is not the judgment but the facts to which the judgment refers, we have really no more occasion to pry into his metaphysical opinions than into those which he may happen to hold in theology.

The foundation and ground of Induction is a more serious difficulty; for, though like the last, it cannot by rights claim discussion in logic, it is nevertheless almost impossible so to treat Induction as not to provoke some perplexing inquiries. The Conceptualist, of course, avoids all this, for he is only concerned with that which is strictly necessary, and therefore with such Induction only (or what he gives that name to) as is performed formally and necessarily. But the material logician

often finds himself in the position of having raised difficulties, by his mode of treating the subject, which almost compel him to commit himself to opinions which cannot be justified from a logical but only from a psychological point of view. Suppose that he says (as Mill does), that all our knowledge of the uniformity of nature is derived from Induction. He is at once met by some such objection as this : " You found that belief upon induction, and yet for every act of induction, even for the very first, you must postulate that belief ? " So long as we keep strictly to the province of logic, no answer, I think, can fairly be given to this objection. Every conscious act of induction must demand and presuppose a belief in the uniformity of nature, not indeed necessarily throughout its whole extent, but, at any rate, over some area; and therefore the belief cannot have grown up from the beginning by a series of such acts. In other words, if the inductive inference and the conviction of the uniformity of nature are both to be consciously apprehended, it appears to be a paralogism to regard them as mutually dependent on one another.

Let the logician, however, be permitted to transgress into psychological inquiries, and an answer seems ready to his hand. It *may* not be a completely satisfactory one, as indeed nothing final can as yet be looked for concerning the nature of belief, but it will serve to turn the edge of the preceding objection. He may fairly reply that we, or our ancestors, have *acted* upon that uniformity, as the brute creatures do, and that it was only at a later stage that consciousness awakened—that is, that what we call belief ripened out of mere association and habit. Take the case of one of the more intelligent animals. They undoubtedly act upon the uniformity of nature ; if they did not, they could not continue to subsist for a day any more than ourselves. Now, suppose a gradual dawn of self-consciousness in one of them, and a consequent desire to justify its mental processes. Precisely the same difficulty would then arise when it attempted to give a *reason* for processes which had been so long satisfactorily performed. The fact is that it is assumed that in Logic, though our processes may be sometimes unconsciously performed, they are, nevertheless, always capable of being called out into distinct consciousness when we choose. This need not be the case in Psychology, and indeed on the doctrines of the analytical or association school can seldom be the case with regard to ultimate principles. Hence the logician, when he attempts to give an account and justification of his proceedings in accordance with his own methods, will occasionally be reduced to the alternative of abandoning difficulties as insoluble, or of giving what will be objected

against as involving a paralogism. It would avoid perplexity if he were frankly to assume or state his psychological premises, and, if necessary, indicate the kind of justification he would give of them. J. VENN.

V.—THE THEORY OF EVOLUTION IN ITS APPLICATION TO PRACTICE.

CURRENT philosophical notions, characteristic of the most recently accepted system or manner of thought in any age and country, are apt to exercise over men's minds an influence which is often in inverse ratio to the clearness with which the notions themselves are conceived, and the evidence for the philosophical doctrines implied in their acceptance is examined and estimated. For any such notion may easily have different shades of meaning, and according to the relations in which it is used may imply many distinct propositions, which have no necessary connection with each other, and for which the evidence is very various, both in kind and degree: while yet, with whatever portion of this implication it may be employed, it is apt to carry with it the impressiveness and *prestige* which it naturally possesses as the last outcome of philosophical reflection. The fallacy of which we thus run a risk cannot be exactly classed among Bacon's "Idola Fori," or his "Idola Theatri," as it is neither due to the defects of popular language, nor to the defects of philosophical method: we must rather call it a hybrid between the two species, resulting from the communication between the Theatrum and the Forum, now much more fully established than it was in the time of Bacon. There would seem to be a peculiar danger of this fallacy in the practical conclusions deduced from the Theory of Evolution: as such deductions are various, complicated, and widely interesting, while they have not yet been systematically treated by any of the accepted expositors of Evolutionism. It is my object in the present paper to guard against this danger by distinguishing different propositions enforced or implied in the doctrine of Evolution as commonly accepted; and considering them severally in their bearing on Ethics, that is, on the Theory of Right or Rational Conduct. With this object, it will not be necessary to enter upon the fundamental question, whether the doctrine of Evolution is merely historical or properly philosophical: whether it merely gives us a probable explanation of the past, or such a justification of it as reason demands. In so far as I myself accept the doctrine, it is entirely on the

former view: but adequately to justify this position would require a separate essay. Nor, again shall I have occasion to pursue the notion of Evolution beyond the limits of organic life: as the influence on practice which any speculations as to the past and future motions of inorganic matter may have is obviously so slight and indirect that we need not take it into consideration.

I. The widest sense in which the term Evolution is used appears to be merely exclusive of Special Creation. Thus, Mr. Spencer says that in forming "a conception of the mode in which living bodies in general have originated . . . . . we have to choose between two hypotheses,—the hypothesis of Special Creation and the hypothesis of Evolution." This latter hypothesis, as he immediately explains, is that "the multitudinous kinds of organisms that now exist, or have existed during past geological eras, ... have arisen by insensible steps, through actions such as we see habitually going on." Similarly, when Mr. Darwin speaks of "Evolution *in any form*," he seems to mean the general hypothesis just stated, in contradistinction to his own special hypothesis of Evolution by Natural Selection. It should be observed that in the above statement the production of living organisms out of inorganic matter is implicitly excluded from the hypothesis; for it is not held generally, nor by the writers to whom I have referred, that this is among the actions which we see habitually going on. What we do see is that living things change slightly in the course of their life, and also produce other living things somewhat different from themselves; the hypothesis, then, is that all the differences among living organisms, which we must conceive as having begun to exist at some point in the history of the organic world, have been produced by the accumulation of these slight differences. And without examining minutely the possibility of living things being brought to our planet from without, we may take it for granted that most of the living things that have existed on this earth have also begun to exist there.

Now in the controversial *mêlée* which has been kept up for half a generation about the "Darwinian Theory," it is sometimes forgotten that the hypothesis of Evolution, *in this wider and more general signification*, is sustained by an immense force of scientific presumption, independent of all special evidence. We cannot suppose, without contradicting the fundamental assumption on which all our physical reasoning proceeds, that an organism or any other material thing that has begun to exist, was not formed out of pre-existent matter by the operation of pre-existent forces according to universal laws; so that if we

do not suppose each new organism to be developed out of some pre-existing organism, we are forced to regard it as causally connected in some totally unknown way with inorganic matter; and this is an alternative which few will embrace. And, again, it is manifestly illegitimate to assume that any new organic form was produced suddenly, *per saltum*, and so in a manner of which experience affords us no example; until it is proved that it could not have been produced by the gradual accumulation of such slight variations as experience shows us continually occurring.

On this point I need not perhaps dwell long. It is more necessary to argue that the theory of Evolution, thus widely understood, has little or no bearing upon ethics. It is commonly supposed that it is of great importance in ethical controversy to prove that the Moral Faculty is derivative and not original: and there can be little doubt that this conclusion follows from the theory which we are now considering. For when we trace back in thought the series of organisms of which man is the final result, we must—at some point or other, it matters not where—come to a living being (whether called Man or not) devoid of moral consciousness; and between this point and that at which the moral faculty clearly presents itself, we must suppose a transition-period in which the distinctly moral consciousness is gradually being derived and developed out of more primitive feelings and cognitions. All this seems necessarily involved in the acceptance of Evolution in any form; but when it is all admitted, I cannot see that any argument is gained for or against any particular ethical doctrine. For all the competing and conflicting moral principles that men have anywhere assumed must be equally derivative: and the mere recognition of their derivativeness, apart from any particular theory as to the *modus derivandi*, cannot supply us with any criterion for distinguishing true moral principles from false. It is perhaps more natural to think that this recognition must influence the mind in the direction of general moral scepticism. But surely there can be no reason why we should single out for distrust the enunciations of the moral faculty, merely because it is the outcome of a long process of development. Such a line of argument would leave us no faculty stable and trustworthy: and would therefore end by destroying its own premisses. It is obviously absurd to make the validity or invalidity of any judgments depend on the particular stage in the process of development at which this class of judgments first made their appearance; especially since it is an essential point of the Evolution-theory to conceive this process as fundamentally similar in all its parts. And it may be further

observed that some of our most secure intellectual possessions are truths (such as those of the higher mathematics) of which the apprehension was not attained until long after the moral faculty was in full play.

All this is so evident, that what seems to need explanation is rather the fact that so much importance is commonly attached to the question as to the "origin of the moral faculty." I am disposed to connect it with that change in the common mode of regarding moral questions, which, in the history of English ethical thought, was effected by the influence of Butler. So long as the moral faculty was regarded* as really a faculty of "intuition" or rational apprehension of objective right and wrong, the history of these intuitions could seem of no more importance to the moralist as such than the history of our perception of space is to the geometer as such. But when the cognitive element of the moral consciousness fell into the background, and it came to be considered chiefly on its impulsive side, as a spring of action claiming a peculiar kind of authority, the validity of the authority seemed to depend on the assumption of an original legitimate constitution of human nature, and the proof that the moral impulse was derived seemed to afford at least presumptive evidence that its authority was usurped. For the old conception of Nature, used as supplying a practical standard (whether in Ethics, Politics or Theoretical Jurisprudence) always suggested a fixed and unchangeable type, created once for all, and therefore both original and in a certain sense universal notwithstanding numerous actual divergences. This latter notion has now entirely vanished from the regions of political and jural speculation, under the influence of the Historical method: in Ethics it still lingers: but the Theory of Evolution (which may be regarded as the final extension of the Historical method) is likely soon to expel it altogether from practical Philosophy.

II. Still reflection shows that the conception really essential to Butler's system, of a definite type or ideal of human existence by conformity to which conduct is made "right" or "good," is in no way irreconcilable with the doctrine which we are examining. In fact the term "Evolution" naturally suggests not merely a process of continual change, but one that brings into continually greater actuality or prominence a certain form or type, a certain complex of characteristics, which is conceived as having had a latent existence at the outset of the process. If, then, this type be regarded as in itself right or good, its

* As (*e.g.*) by Cudworth, Clarke, and the earlier orthodox moralists generally.

place in a moral system will correspond to that of the "Nature" of præ-evolutional writers. Either notion professes to meet the largest demands of the moralist, by establishing a clear and definite relation between "what is" and "what ought to be;" though the demands are met in a different way in each case. On the older view we have to ascertain the ideal of humanity, partly by tracing history backwards to the cradle of the individual or of the race, and partly by discerning and abstracting the permanent type amid the variations and imperfections of actual men and societies. On the newer view we see it gradually realised more and more as the process which constitutes the life of the universe goes on. In either case the duty of realising this ideal furnishes the supreme rule of conduct; though on the latter view we have the satisfaction of knowing that the normal operation of the Power manifested in the universe is continually producing, to an ever greater extent, the result which we rationally desire.

Here, then, in our analysis of the notion of Evolution, we have at length come upon an element of fundamental practical importance; though it is an element of which the presence is somewhat latent and obscure. Probably all who speak of Evolution mean by it not merely a process from old to new, but also a progress from less to more of certain qualities or characteristics. But that these characteristics are intrinsically good or desirable is more often implied than explicitly stated: otherwise it would be more clearly seen that this ethical proposition cannot be proved by any of the physical reasonings commonly used to establish the doctrine of Evolution. The truth is that the writers who have most occupied themselves in tracing the course of man's development have often not been practised in that systematic reflection on the play of their own moral faculty which is essential to clearness of thought in the discussion of ethical principles. In Comte's system, for example—and to Comte, perhaps, more than to any other single man, the triumph of the Historical Method in Politics is due—no clear reason seems to be given why the Progress, which is the end of the statesman and the philanthropist, should coincide with the Progress that the Sociologist has ascertained to be a fundamental fact of human history. It is certainly not from any blind confidence in the natural order of the Universe that Comte takes as a first principle of practice that we are to help mankind forward in the direction in which, speaking broadly, it tends to go. Yet this does seem to be his fundamental precept; for though he takes pains to show that an increase of Happiness attends on Progress, he never uses the production of Happiness as the end and criterion of proper moral and in-

tellectual culture. It is rather the "bringing into ever greater prominence the faculties characteristic of humanity" to which he bids us direct our efforts; while, again, the development which we find in human history is defined as "le simple essor spontané . . . . des facultés fondamentales toujours préexistantes, qui constituent l'ensemble de notre nature." Such phrases remind us that we cannot take Comte as a representative of Evolutionism: and that his notion of development is transitional between the old doctrine of fixed types of human nature, and the new doctrine of a perpetual process of life, in which humanity, as we commonly conceive it, is but a stage accidentally marked off by the fact of our living now. A disciple of Mr. Darwin knows nothing of "always pre-existent fundamental faculties characteristic of humanity." In his view, as our ancestors were other and less than man, so our posterity may be other and more. If he includes in his conception of Evolution the notion of perpetual Progress in certain definite characteristics, these must evidently be characteristics which belong to all living things as such, though they appear with ever greater prominence as the evolution of life proceeds. Shall we then say that Progress consists in increasing complexity of organisation, or (to use Mr. Spencer's more precise phrase) in more and more "definite coherent heterogeneity" of changes in the living being correspondent to changes in its environment? But Progress thus interpreted seems no longer adapted to give us the ultimate end or first principle of Practice. For, though we sometimes use the terms "higher" and "lower organisms" in a way which might seem to imply that mere complexity of organisation is *intrinsically* preferable or desirable; still, perhaps, no one would deliberately maintain this, but only that it is desirable as a means to some further end. And this end would be commonly taken to be increase of Happiness; which most Evolutionists believe to be at least a concomitant of Progress. "Slowly but surely," writes Mr. Spencer, "Evolution brings about an increasing amount of happiness," so that we are warranted in believing that "Evolution can only end in the establishment of the most complete happiness." On this view, the Theory of Evolution in its practical aspects would appear to resolve itself into Utilitarianism, with the suggestion of a peculiar method for pursuing the utilitarian end. For, if nature is continually increasing Happiness, or the excess of pleasure over pain in the whole sum of sentient existence, by continually perfecting the "correspondence between life and its environment," this latter should perhaps be taken by us as the general means to the former end and the immediate object of our efforts.

III. A different view, however, is sometimes taken of the fundamental character of Evolutional ethics, which may be conveniently introduced by considering an ambiguity in the phrase I have just quoted. For the term "correspondence," or the nearly equivalent terms "adjustment" and "adaptation," as employed by Mr. Spencer and his disciples, appear to blend two different meanings; or, perhaps, to imply the necessary connexion of two distinct characteristics. They imply, namely, that the more exactly and discriminatively the changes in an organism represent or respond to the different changes in its environment, the more will the organism be "fitted to its conditions of existence" in the sense of being qualified to preserve itself under these conditions. But it seems that we cannot assume that this connexion will hold universally; for the responsiveness (*e.g.*) of an invalid's organism to surrounding changes is often more discriminating than that of a man in strong health, though less effective for self-preservation. Indeed, the common notion of "delicacy of organisation" blends the attribute of subtle responsiveness to external changes with the very opposite of strong and stable vitality. Having then to choose between discriminating responsiveness and tendency to self-preservation, an Evolutionist may take the latter as the essential characteristic of the well-being of an organism. And rising to a universal point of view, and considering the whole series of living things of which any individual organism forms a link, he may define "general good" or "welfare"—as Mr. Darwin does—to consist in "the rearing of the greatest number of individuals in full health and vigour [and with all their faculties perfect]* under the conditions to which they are subject." Here we have a very different notion from Happiness offered us as representing the ultimate end and standard of right conduct. Mr. Darwin, indeed, contrasts the two, explicitly rejecting "general happiness" as the standard, and thus distinguishes his ethics from Utilitarianism as commonly understood.

But can we really declare that when we apply the terms "good" or "bad" to the manner of existence of an organised being, we mean simply to attribute to it more or less of the tendency to self-preservation, or to the preservation of its kind? Certainly such a reduction of the notion of "well-being" to "being" (actual and potential) would be a most important contribution from the doctrine of Evolution to

* I have put this clause in brackets, because the term "perfect" implies some standard of "good" or "well-being;" and if this standard were different from that which the definition gives, the definition would be palpably faulty; while if it be the same, the clause seems superfluous.

ethical science. But it at least conflicts in a very startling manner with those ordinary notions of Progress and Development, which I have already noticed as combining ethical and physical import. For, in our use of these notions, it is always implied that certain forms of life are qualitatively superior to others, independently of the number of individuals, present or future, in which each form is realised. Whereas the doctrine above stated, if pressed to its logical results, would present to us all equally numerous species as *primâ facie* on a par in respect of goodness, except, indeed, that the older (and so generally the "lower," as we commonly estimate) would seem the better, in so far as we have more evidence of their capacity to exist under the physical conditions of our globe. A closer investigation would, of course, disclose many differences in the prospects of future existence enjoyed respectively by the different forms, but these would but rarely and accidentally correspond to the commonly recognised differences of lower and higher. And if we confine ourselves to human beings, to whom alone the practical side of the doctrine applies, is it not too paradoxical to assert that "rising in the scale of existence" means no more than "developing further the capacity to exist?" A greater degree of fertility would thus become an excellence outweighing the finest moral and intellectual endowments; and some semi-barbarous races must be held to have attained the end of human existence more than some of the pioneers and patterns of civilisation. In short, when fairly contemplated, the doctrine that resolves all virtues and excellences into the comprehensive virtue

"of going on, and still to be"

can hardly find acceptance. At the same time, we must admit that ζῆν (in Aristotelian phrase) is a necessary condition of εὖ ζῆν; and, since living at all has been a somewhat difficult task to human communities, until a very recent period in the history of our race, the most important part of the function of the moral sense has consisted in the enforcement of those habits of life which were indispensable to the mere permanent existence of any society of human beings. This seems to me the element of truth in Mr. Darwin's view, and in that hypothetical construction of the origin and growth of the moral sense with which he has connected it. We may admit further that any defect in the capacity for continued existence would be a fault in a social system which no excellences of a different kind can counterbalance; but this is a very different thing from saying that all possible improvement may be resolved into some increase of this capacity.

IV. If, then, the Well-being of living things is somewhat

different from their mere Being, however secured and extended in space or time, what is the content of this notion "well" or "good?" I have elsewhere tried to show that the only satisfactory answer to this question is that of the old-fashioned Utilitarianism which Mr. Darwin and his disciples are trying to transcend. The only rational ultimate ground, in my opinion, for pronouncing any sentient being in a "good" condition, is that its condition is calculated to produce as great an amount as is under the circumstances possible of Happiness, that is, pleasant or desirable feeling or consciousness: taking into consideration not its own happiness only—for we have no rational ground for preferring this to any other happiness—but that of all sentient beings, present or future, on whose manner of existence it exercises any influence. If this be so, it only remains to ask how far the notion of Progress or Elevation in the scale of life, as understood by Evolutionists, supplies us with clear guidance to the right means for attaining this ultimate end. Now, no doubt, in comparing the happiness of man with that of the lower animals, or the happiness of civilised man with that of savages, we commonly assume that amount of happiness varies according to degree in scale of organisation. We do this because what we really mean by "higher life" seems, when we look closely at the notion, to be convertible with *more* life. As Mr. Spencer says, "we regard as the highest life that which shows great complexity in the correspondences, great rapidity in the succession of them, and great length in the series of them;" the two former characteristics supplying a measure of the intensive quantity of life lived in a given time, and the latter adding its extensive quantity. And the experience of mankind, as a whole—though there are not wanting individual dissentients—seems to support the belief that Conscious or Sentient Life is, speaking broadly and on the average, desirable; that some degree of pleasure is the normal state of sentient beings as such and pain abnormal. Thus it follows that the "higher" such a being stands in the scale of organisation, the happier it is, generally speaking. In accordance with this general principle we regard the exercise of more varied and complicated activities, the extension of sympathy with the pleasures and pains of others, the development of scientific and historical interests, of æsthetic sensibilities, &c. —which might all be brought under the general notion of "progress in the correspondence between the organism and its environment"—as involving generally an increase of happiness. Still, in so far as we pursue any of these elements of culture for their own sakes, our pursuit is closely guided and checked by experience of the pleasure derived from them; and it would

seem that this ought to be so. For, in the first place, the connexion above stated is not universal, as the more intense life may be intensely painful; and, independently of this, the notions of Culture, Elevation of Life, or Perfection of Organisation are not sufficiently definite to be substituted for that of Happiness as the immediate object of rational pursuit; indeed, the pleasure actually experienced seems often a better test of true development in any direction, than the latter (as otherwise estimated) can be of the pleasure that will ultimately accrue.

But the fact is that in the ordering of an individual man's life, Development or Perfection of Organisation scarcely comes into competition with Happiness as an end of action. For in this case we cannot alter the structure of the organism much or directly, but only to a slight extent by altering its functions; and the functions of each civilised man are, in most cases, determined for him by a combination of imperious bodily necessities and fixed social relations, and are exercised not for their own sakes but in order to provide adequately some more indispensable means of happiness. It is rather when we pass from the individual human being to consider the far more modifiable social organism of which he forms a part, that it becomes of fundamental importance to know whether the doctrine of Evolution can guide us to the form of organisation most productive of happiness. For, if this be so, the efforts of the statesman and the philanthropist should be primarily directed to the realisation of this form, and empirical utilitarianism would be, to a great extent, superseded in the political art. The right social order would, no doubt, approve itself as such by the general experience of happiness resulting from it; but it would become unscientific to refer to this experience as determining the settlement of great political questions.

Before, however, we consider if our knowledge of sociology is sufficiently advanced to enable us to define the political ideal, we must notice one fundamental difficulty in constructing it, which arises inevitably from the relation of the individual man to society. For the most prominent characteristic of the advanced development of any organism is the specialisation—or, as Mr. Spencer calls it, "differentiation"—of the functions of its different parts. Obviously the more this is effected, the more "definite coherent heterogeneity" will be realised in the organism and in its relations to its environment. But obviously too, this involves *pro tanto* a proportionally less degree of variety and complexity in the life of each individual member of the society whose functions are thus specialised; and their life becoming narrow and monotonous must become, according to

our present hypothesis, less happy. This result has often been noticed by observers of the minute sub-division of labour which is a feature of our industrial progress : but the same sort of *primâ facie* conflict between individual and social development occurs in considering most of the great problems of modern politics; such as the relations between rich and poor generally, the relations between governors and governed, and the relations of the sexes. Now, as it is the individual, after all, who feels pleasure and pain, it is clear that his development (or happiness) must not be sacrificed to attain a higher form of social organisation ; the latter end can only be sought within the limits fixed by the former ; the point then is to determine what these are. It may be thought, perhaps, that the history of past stages in the evolution of society will indicate the reconciliation or compromise between individual and social development to which the human race has gradually been working up. It would seem, however, that history rather shows us the problem than its solution. For, while a continually greater specialisation of functions is undoubtedly an ever-present feature of social development, we have to notice as proceeding side by side with this a continually fuller recognition of the rights and claims of the individual as such. And this, giving a point of view from which the elements of the community are regarded as equal and similar, considerably qualifies, and, to some extent, counterbalances the tendency to "heterogeneity" above noticed ; it is obvious, *e.g.*, that an ancient society with a fully developed caste-system, where the existence of the individual was absorbed in and identified with his social function, was, in some respects, more heterogeneous than our own, in spite of the greater differentiation of functions in the latter. Hence we have on the one hand an ever increasing social inequality, and, on the other hand, an ever profounder protest against this inequality; and, whatever the right compromise between these conflicting tendencies may be, it does not seem possible to determine it by any deduction from the doctrine of Evolution.

For when we turn to examine the principles of social construction propounded by eminent sociologists, we see very plainly that any attempt to determine the political ideal by a scientific formula of Social Evolution must at least fail in obtaining that "consensus of experts," which is, to common men, the most satisfactory guarantee of scientific method. Those thinkers who are most confident of having discovered the law of progress seem hopelessly disagreed as to the next term in the series. For example, Comte teaches us that the "influence dispersive du principe de la spécialisation," tending in its

extreme form to a "sorte d'automatisme humain," must be met by a corresponding development of that "réaction nécessaire de l'ensemble sur les parties," which constitutes the proper function of government. "L'intensité," he says, "de cette fonction régulatrice, bien loin de devoir decroître à mesure que l'évolution humaine s' accomplit, doit, au contraire, devenir de plus en plus indispensable;" and actually, he holds, we find the two tendencies to specialisation and to central regulation developing, as progress goes on, so as to balance each other by a continually proportionate increase. And certainly the amount of regulation contemplated in Comte's Utopia would seem sufficient to counteract any conceivable development of centrifugal impulses. While Mr. Spencer is no less confirmed by sociological study in his opposite doctrine that the proper function of government is what he calls "negatively-regulative control," viz.: the prevention of mutual interference and the enforcement of free contracts among the members of a community. Mr. Spencer supports his ideal of organisation by a reference to biological analogies; but, here again, his view is diametrically opposed to that of our most eminent living morphologist.* In this diversity of opinion, it is perhaps premature to consider the practical results that would follow from our attaining really scientific prevision of the social relations of the future. But I must observe that it would still remain to be proved that the mere advance to a higher stage in social organisation is necessarily accompanied with a proportionate increase of happiness. Past history shows us the greatest differences in the prosperity of different nations on approximately the same level of social development; and it seems most reasonable to suppose that such prevision of social changes as we are likely to attain will rather define the limits within which the political art has to operate than furnish the principles of the art itself.

V. Hitherto, in considering the bearing of Evolutionism on the theory of right conduct, we have assumed that such conduct is to be not only objectively rational, or the best means of realising what is ultimately good; but also subjectively rational, consciously chosen by the agent as a means to this end. This, however, though in the view of most moralists it seems to be the ideal form of human action, is manifestly not the universal or even the most common form. Men are prompted to action by other appetites and desires far more frequently than by the desire to do what is reasonable or right:

* Cf. Professor Huxley's essay on "Administrative Nihilism."

so that some ethical writers even ignore the very existence of this latter motive, and regard human action as always stimulated by one or other of the more special impulses; including what are called "moral sentiments," or immediate unreflective likings and aversions for particular kinds of conduct, contemplated without reference to any ulterior end. Indeed the operation of such unreflective impulses appears to be the most prominent element in the common notion of "conscience": so that the denomination by the Utilitarian school of the common morality which they wish to supersede as "instinctive" or "sentimental" is not unfrequently accepted by other than Utilitarian Moralists. Now, if the doctrine of Evolution, in its application to the origin and growth of such instinctive impulses generally, and in particular of moral sentiments, is able to exhibit these as Nature's means of attaining that general happiness which is the conscious end of Utilitarian calculation; a reconciliation between "instinctive" and Utilitarian morality seems to be effected, which composes the long conflict between the two schools. This is, at any rate, the claim put forward by Mr. Spencer and other expositors of evolutionism.

In proceeding to examine the claim, we must first consider how this part of the Evolution doctrine is supposed to be proved. Two methods of proof have been put forward, fundamentally distinct, but yet not incompatible: in fact, so far from incompatible that one of them almost needs to be supplemented by the other. One method consists in the application to sociology of that hypothetical-deductive use of the theory of Natural Selection which has of late years been common among biologists of the Darwinian school. Moral sentiments, it is said, are impulses that tend to the maintenance of society: hence a tribe in which they were accidentally developed would tend to be victorious over other tribes in the struggle for existence: and thus moral sentiments would come to be a part of the essential characteristics of humanity: hence we may conclude that it was in this way that they were actually generated. It will be seen that this view of the moral sentiments is in immediate connection with that account of the Well-being of an organism which, distinguishing it from Happiness, reduces it (as I have already noticed) to Being actual and potential. In order therefore to harmonise it with Utilitarianism we require a further application of the same deductive method: as thus—Men are stimulated to actions and abstinences in proportion as they find these in the long run pleasurable and their opposites painful: therefore tribes, whose members derive the greatest balance of pleasure over pain from actions and modes of existence conducive to the preservation of the tribe will have a distinct advantage

in the struggle for existence: therefore the societies that in the long run survive will be so constituted that the maximum happiness of their members will be attained by conduct tending to the preservation of society. But even the most roseate optimism must admit that this double harmony between pleasant and preservative conduct, and between individual and universal well-being, is ideal and future: that it does not represent accurately the present, and still less the past experience of the human race. And hence (as Mr. Darwin himself has not failed to observe), the theory of natural selection has less explanatory efficacy here than it has in its usual biological applications. For in those the variations naturally selected are taken as accidental, or at least no explanation of them is necessary for the justification of the theory: we have only to assume generally a slight indefinite tendency to vary from the parental type in the propagation of life, and then the action of the environment will do the rest. But in the case of the sociological changes above-mentioned, this simple account of the matter is hardly admissible. For as the interest of the community continually involves more or less sacrifice of the individual, especially in the early stages of human history which the theory contemplates, any individual varying in the direction of morality would be liable to be cut off, and would fail to propagate his peculiar type.* We require therefore some further explanation of the tendency of human character to take this particular line of change. For it will hardly do to reply that a *tribe* which manifested this tendency would necessarily flourish: the chances are so very much against the production of a tribe of which the individuals accidentally combine to maintain an individually unprofitable variation in one special direction. This further explanation is found in the second method to which I referred, which is the one employed by Mr. Herbert Spencer. His theory, briefly given, is this: that experienced pleasures and pains produce secondary likings and aversions

* "It is extremely doubtful whether the offspring of the more sympathetic and benevolent parents, or of those who were the most faithful to their comrades, would be reared in greater numbers than the children of selfish and treacherous parents belonging to the same tribe. He who was ready to sacrifice his life, as many a savage has been, rather than betray his comrades, would often leave no offspring to inherit his noble nature. The bravest men, who were always willing to come to the front in war, and who freely risked their lives for others, would on an average perish in larger numbers than other men. Therefore it hardly seems probable that the number of men gifted with such virtues, or that the standard of their excellence, could be increased through natural selection, that is, by the survival of the fittest."—Darwin, *Descent of Man*, ch. v., 130 (2nd. ed.).

for pleasure-causing and pain-causing conduct, which from being habitual become organic and so capable of being transmitted to posterity: and that through the interdependence of interests that results from gregariousness and the interchange of emotions that results from sympathy, it is the common experience of *all* that practically operates in producing these derivative sentiments and habits; so that they ultimately appear as instincts tending to promote the interests of the community.

It appears to me that these two methods, taken together, furnish a highly plausible explanation of the development of morality in a race of animals gregarious, sympathetic, and semi-rational—such as we may conceive man to have been in the præmoral stage of his development. But I fail to see how we are thus helped to a solution of the conflict between the Utilitarian and Intuitional schools of Ethics: in so far, that is, as either school professes to supply not merely a psychological explanation of human emotions, but an ethical theory of right conduct. For, putting aside the discrepancy before noticed between General Happiness and the Preservation of Race, we are still left asking the question: what ought we to do when Moral Sentiment comes into conflict with the conclusions of Rational Utilitarianism? Granting that both are really akin and spring from the same root, which ought we to obey, Reason or Instinct? As far as I can see, the "reconciliation" proposed by Evolutionists results in a practical surrender on one side or the other; though it is not always clear on which side, and a plausible case may be made out for either. On the one hand it may be said that Moral Sentiments (or other derivative likings and aversions) constitute Nature's guidance to Happiness; and that our power of calculating pleasures and pains is so imperfect as to make it really rational in the pursuit of happiness, to disregard the results of conscious calculation when they are clearly in conflict with any of these embodiments of unconscious reasoning and outgrowths of ages of experience. On the other hand it may equally be urged that the symbolical representation and comparison of experienced pleasures and pains which we call the exercise of practical reason, is only the final phase of that adaptation of the organism to its circumstances which in its earlier phases took place by the development of these secondary instincts: that, in short, if Instinct is really implicit (utilitarian) reason, it is better to perform the calculation explicitly. Certainly we can balance any statement of the sources of fallibility in utilitarian calculation by an equally impressive demonstration of the imperfections and misguidance of instinct.

It may perhaps be said that an Evolutionist theory does not profess to prove that Utilitarian and Intuitional Ethics coincide in detail, but only to afford them a broad general ground of reconciliation. But in this case it seems to me ethically superfluous, whatever historical interest it may have. For this general result may be much more easily and satisfactorily attained by a survey of men's actual moral sentiments, and a comparison of them with the conclusions of utilitarian calculation. The practical disagreements between different schools of moralists, though their magnitude and importance are perhaps commonly underrated—certainly bear a small proportion to their agreements: but a theory of the origin of morality which merely explains the latter can hardly be said to effect a settlement of ethical controversy.

HENRY SIDGWICK.

VI.—PHILOSOPHY AND SCIENCE.

I.—As regards the Special Sciences.

Distinctions, not Definitions—such is and must be the primary basis of all Philosophy. Before you can give a definition you must know in general what you are about to define, that it is something proper to be defined, and has a real local habitation in the world of thought. You cannot set out to define, as a certain Scotch lawyer swore, "at large;" you cannot put up with *definitio vaga*.

It is different with what are called Systems of Philosophy. There the work of Distinction is supposed complete, and you begin with applying them to the phenomena; your country is already mapped, and you proceed to measure its divisions. Systems of philosophy which have not thoroughly done the preliminary work of distinction cannot be permanent. For instance, Spinoza begins with a definition of *causa sui*; "by Cause of Itself I understand that, the essence of which involves its existence; or again, the nature of which cannot be conceived except as existing." Very good; but *is there* such a thing? Is such a thing possible to thought? There is at least one term here which calls for analysis. Essence may be considered to be sufficiently explained by being distinguished into the *nature* of anything as it is *conceived*. But Existence, what is that? Till we know that, we are ignorant whether any essence can possibly involve existence, whether putting "existence" into the definition of anything makes that thing to exist. There is a good deal of distinction-work to be done

with reference to "existence," before a causal connection between a thing and itself, *causa sui*, can be founded on a conceptual connection between the essence and the existence of that thing. Till then, the famous definition of *causa sui* is all in the air, a definition "at large."

System then or no system, the first thing to be done and done thoroughly in Philosophy is to distinguish,—to distinguish in order to know what to define and what sort of notions to employ in defining it; and the first distinction to be established, and one which is a pre-requisite of all the rest, is between Philosophy and Science. The ground must first be won before we can proceed to distinguish the several provinces which it contains; there can be no distinctions within philosophy, unless there is a philosophy which is itself distinct from all other branches and kinds of knowledge.

This distinction cannot be a total separation; an unscientific philosophy would be no philosophy at all. But the distinction may be drawn in many ways, of which only one can be the true one. Four ways of drawing it may be enumerated as follows:

First, it is possible so to draw the line between them that nothing remains for philosophy but the preliminary guesses at truth which men have made before striking into the true methods of discovery, which true methods with their results are science, and supersede the old mistakes which are philosophy. If this were the true account of the matter, philosophy would have no *locus standi* in the intellectual world, only the ignorant would be its votaries, and philosophers would be no better than obscurantists, basing themselves more or less consciously on the maxim, *populus vult decipi et decipiatur*. This way of looking at the matter, being very prevalent in England, may perhaps be called English Positivism.

Secondly, the line may be drawn between them by saying, that as science advances, and divides into many branches, room is made for a co-ordination and systematisation of all, which is a work demanding separate treatment and separate labourers; and that this work is philosophy. This view is Comtian Positivism.

Thirdly, it may be maintained that philosophy is the discovery of Absolute Existence, and that the sciences only then become scientific when they are deduced from the laws of this absolute existence, from which they thus receive their whole scientific character. This is the Hegelian view.

Fourthly, a position may be taken up which ascribes to philosophy as its special work, besides the co-ordination and systematisation of the second head, a negative task,—the task

of disproving and keeping out of science all ontological entities, whether these appear merely as spontaneous products of the uncorrected imagination or have been reduced into systems, such as for instance the Hegelian. This view is that taken by Mr. Lewes in the important work* which is now in progress.

There is yet a fifth view possible, the one which I shall endeavour to establish in the present paper. Briefly stated it is this: Philosophy is more than the co-ordination and systematisation of the second head, and more than the negative function of the fourth head; it has a positive content and a positive method of its own, and yet a content and a method which are in no sense ontological or transcendent. And this method and content are the permanent and indestructible *raison d'être* of philosophy, assuring to it an existence as a distinct kind of science.

Let me be allowed to dwell a little on what is involved in this view, which I have stated at present in very general terms. If philosophy has a distinct method and a distinct and positive content, it follows that there has been for some definitely assignable period a growing system of philosophical doctrine, of philosophical truths retained distinguishable from philosophical errors discarded, a system due not to one or two philosophers only, but to many, the growth not of a single epoch, but of centuries. There must be a history of philosophy different from the history of successive systems of philosophy, and from the law of their succession. The systems of philosophy are not philosophy, its history is not the history of their succession. It follows, likewise, that there cannot be a history of philosophy until the object of that history, philosophy itself, the growing system, has been detached and delineated.

But what meets us most prominently when we first turn our attention to philosophical subjects is the apparent absence of a philosophy, the obvious presence of a multitude of conflicting systems. What is the explanation of these two facts? The readiest explanation is offered by the first of the views enumerated above; the systems are present because undisciplined minds have abounded, the philosophy is absent because it is non-existent. But on the view which I am about to maintain, this easy explanation of the facts cannot be the true one. The true explanation is that philosophy is apparently absent because it is yet in its infancy, and the systems are obvious because they are necessary means of giving it birth. The systems

* *Problems of Life and Mind.* See particularly Vol. I. pp. 62, 75, 86, and Vol. II. p. 221.

would, on this view, have served a purpose consistent with their own untenability, and philosophy would have been receiving form independently of their decay. It is true that on this supposition philosophy must be as yet in a very early stage of its development, and so, no doubt, it is. Its systematisation as an organic whole is most imperfect; organisation is its primary need. But everything seems to me to show the possibility of such an organisation, the possibility of marking out and giving coherence to a body of philosophical doctrines which shall form for philosophers of all schools a common possession and a common basis, as they will assuredly have been won by a common effort.

Nevertheless, system-making in philosophy cannot be laid aside; there is one indispensable function which it alone can perform. It is the mode by which verification is effected; it is to philosophy what verification by observation and experiment is to the physical sciences. And by the nature of the case it is the only verification of which the phenomena of philosophy are capable; for these are not like those of the physical sciences, things which fall under the cognisance of the outer senses, but pure representations; pure, that is, from presentation; with these science ends, and with these philosophy begins. Its theorems consist not simply in thoughts about things, but in thoughts about thoughts of things. These pure representations, however, which are the phenomena, the facts, of philosophy must always be verifiable by the facts of nature, that is to say, in technical terms, by the presentations which they represent. In many cases these verifications are so simple that any one can perform them without a special scientific training, as, for instance, in the pure representation, "all visible surfaces are coloured." Others are more difficult, and here we must have recourse to science to prove the truth of the representation before we can admit it as a fact in philosophy.

Thus the law of gravitation is, in science, a thought about things, being, in nature, a general fact in the things themselves. Here the verification consists in examining the things. But the law of gravitation, as it is in science, in its character of a thought about things, becomes, in philosophy, the object-matter of a further examination, a philosophical one; it becomes one of the phenomena of philosophy, and the basis of thoughts which have thoughts of things for their object. Here the verification of any theorem of philosophy relating to the law of gravitation must consist, not in comparing the law of gravitation with physical phenomena, which is a verification belonging to science, but in comparing the theorem of phi-

losophy with the law of gravitation as it is in science. The ultimate as well as the particular laws of science are among the phenomena of philosophy; it is only to be regretted that they are still so few. While, then, the laws of science are verified by the facts of nature, those of philosophy are verified by the laws of science; in other words, theories of philosophy must be made to harmonise with the laws of science so far as these are at any time known; and it is from this requirement that all legitimate system-making in philosophy springs.

In these remarks we may also read the explanation of the predominantly literary character of philosophy in contrast with science, of its workshop being the library not the laboratory, its pabulum the writings of previous or contemporary philosophers. For philosophy is primarily and mainly, I mean in its whole analytic branch, concerned with *clearing the ideas*, not with discovering new facts, but with analysing old ones; its problem being, not how the world came into being, but how, having come, it is intelligible.

I now proceed to establish the true distinction, as I conceive it, between philosophy and science. In the first place it is abundantly clear that they have points of agreement. Going back to the meaning of those who first called themselves philosophers, lovers of knowledge instead of possessors of it, it is clear that the position which they thus took up was not one of disregard to knowledge already attained, to knowledge in and for itself, but the adoption of a new point of view by the observer towards that knowledge; it involved a generalisation of the notion of knowledge, and brought out the fact that while they were possessors of some portions of knowledge they were only aspirants to possess other portions, which other portions were to them as yet unknown, and only to be called knowledge *in potentia, in futuro*. At the same time this future, and not yet actual, knowledge was necessarily assumed as being of the same kind, in point of being truly knowledge, as those portions which were already reduced into possession. Philosophy, then, was conceived as a further search, a pioneering expedition into realms as yet unknown, in order to bring them under laws of the same kind as those which constituted the knowledge already discovered.

So far there is, it may be said, no very wide distinction between philosophy and science; for science, too, must always have recognised the search for further knowledge as essential to itself; a science which professed to contain only what was already known, and not also means and methods for future discoveries, would be a mere *scientia docens*, not *utens*; and philosophy would be merely a grandiloquent name for one part

of science, for that part of it which faced forwards into the as yet unknown and undiscovered. In short, if this distinction were all, the first of the views enumerated above would be fully justified.

But now comes another distinction. As science advances, her discoveries are made piecemeal, one by one ; as they are made they are compared and classified ; and thus along with the general advance of science there goes on a distinction of the whole into special sciences ; and as the number of new discoveries increases in each branch of science, the growing mass and complexity of each branch becomes sufficiently great to occupy and more than occupy the whole energies of individual men, leaving them no disposable opportunity for making discoveries in other branches than their own. But in every special branch of science, as it is thus called into being by the growth and development of knowledge, the same distinction prevails, I mean the just noted distinction between present and future knowledge, between hypotheses that have and hypotheses that have not yet been verified. Here it is that the distinct scope of philosophy takes, as it were, a second step towards its manifestation. And the general forward outlook in the special sciences taken together, as distinguished from the already acquired knowledge, taken together, in all of them, is that which marks philosophy in this its second, but still most rudimentary, stage of distinction from science. Philosophy appears in this second stage of its life, so to speak, as taking the results acquired by each of the special sciences, and endeavouring to frame hypotheses which should unite them into a single system, and make them serve as a guide suggestive of new hypotheses.

The rudiments of the notion of philosophy, as distinguished from science, are thus given by the two combined characteristics of generality and hypothesis. But the rudiments only. And these same characteristics contain in themselves the germ of a third, which is necessarily developed from them. If we stopped at these two, seeing nothing else in philosophy to differentiate it from science, we should find ourselves holding the second view, that of Comtian Positivism. For it may be argued that, even supposing the greatest completeness in the number and organisation of the special sciences to have been reached, and by consequence the greatest generality in the hypotheses which will connect their results into a system of the whole ; in which case the greatest possible difference would exist between the functions of science and those of philosophy, as they have been up to this point delineated ; even then, it may be said, the functions of philosophy, so far as they

have any scientific value, are not different *in kind* from those of science. Philosophy, the framer of general hypotheses, is merely a special science to which a particular task is assigned, for convenience' sake, that of co-ordinating the several sciences into a single system of sciences, and the results of all into a single science of nature. The main problems of philosophy would be two, or rather one with a double aspect, the Classification of the Sciences, and the Codification of the Laws of Nature ; in fact, just what Comte aimed at in his first great work, the *Cours de Philosophie Positive.* But neither of these problems is different in any essential characteristic from those of science proper, that is, from science in any of its special branches. The distinction of philosophy from science would be, then, in this case a detail, most important it is true, and even necessary, but one resting on no fundamental difference in their functions.

All this I take to be indisputable ; and if no other distinction than the two already mentioned can be shown to exist between philosophy and science, then it must be admitted that philosophy has no special *raison d'être,* no claim to a separate and independent but merely to a nominal existence, such as the term Positive Philosophy is intended to accord to it. I proceed, then, to show that there is a third characteristic, by which, in combination with the two former ones, philosophy is distinguished as different in kind from science.

All the special sciences, in their demonstrations, run up to certain ultimate notions as their basis of demonstration, and there they stop. Beyond these they do not care to pursue their analysis, content with the acknowledgment, which no one refuses, that those ultimate notions which they take as their basis correspond to realities of experience, and represent those realities with essential accuracy. Some among the special sciences base themselves upon notions which they take from other special sciences more abstract and more general than themselves ; physiology, for instance, partly upon chemical notions, partly upon mechanical, partly upon physical ; chemistry bases itself partly upon mechanical, partly upon physical; these two last run up again into what is called rational mechanic ; and here for the first time we meet with ultimate notions which are not derived from any other more abstract special science, but are drawn directly from the fountain head, experience.

These ultimate notions are Mass, and Energy Potential and Kinetic. That is the shape into which rational mechanic has thrown the two older and vaguer notions of Matter and Force, for the sake of first defining them and then exactly calculating

or measuring them. Mass is measurable matter, "quantity of matter" being its definition. Energy, potential and kinetic, is phenomenal and measurable force, as distinguished on the one side from force as the cause of motion, on the other from particular forces, that is, groups or modes of motion of a particular kind, as, for instance, gravitation or electricity. For both force and energy involve the notion of motion, the motion of masses or portions of matter in action and reaction with other portions. And both in mass and energy taken together, and in matter and force taken together, motion is involved. Motion itself again is abstracted and treated apart from the different kinds of matter which move, in a separate branch of science known as kinematic; and this branch forms the connecting link between rational mechanic and the sciences of pure mathematic. What I have, then, specially to observe is, that in rational mechanic we meet with elements or notions which are not derived from pure mathematic, and which have no other source than direct experience; and of these notions, which in their most abstract and general shape are called Matter and Force (measurable and calculable under the terms Mass and Energy), science can give no other account than that they are facts, and ultimate facts, of experience. Experience is their source, and experience also furnishes the verification of the reasonings concerning them.

Rational mechanic, in respect of its other elements, holds of geometry and the sciences of mathematical calculation, arithmetic, algebra, and the calculus, through the medium of kinematic. And these sciences include between them, and are based upon, the notions of abstract Motion (which involves those still more abstract of Space and Time), Number, Quantity, Continuity, Discontinuity, Infinity, and Figure. Pure mathematic includes all the methods of calculation and measurement so far as they are irrespective of what the things are which are calculated or measured. And as such these sciences base themselves upon certain ultimate notions which serve as principles of the processes of calculating and measuring.

The question accordingly arises with respect to these sciences of pure mathematic,—Are they competent to explain thoroughly the nature of those notions which they assume as their ultimate bases of demonstration? Does, for instance, the calculator explain what an Unit is? Certainly not. All he tells us is—We can count anything *once*. This *once* is the unit of numeration, and it is obviously independent of, and indifferent to, any particular kind of object counted (or measured) by it. In fact, he *defines* an unit, and defines it

sufficiently for his purpose ; it is defined in such a way as to serve for a basis of further reasoning, but not in such a way as to show on what it is itself based. He *defines* but does not *analyse* it.

Again, does the geometer explain how and whence he comes by his object-matter, how he comes to regard pure spatial extension as figured ? No. He *begins* with figured space. Either he begins with the notion of Volume, and proceeds to analyse it by the ways in which it is bounded, or else he begins with the notion of Boundary, points, lines, surfaces, and proceeds to the construction of Volume. The Configuration of Space is his object-matter ; and he analyses this, notionally as well as actually, to its remotest part ; but he assumes Figured Space, in the general, *as a datum ;* he does not tell us how it comes to be possible, but contents himself with saying that we all know it to be so, and that this his basis is sufficiently clear in meaning and secure in reality.

As I am not primarily occupied with the inter-connection of the sciences, it will not be expected that I should have stated the exact moment at which these ultimate notions are introduced into the sciences, or have made a distribution of them beyond the possibility of objection. It is enough that the positive physical sciences between them, from physiology to mathematic, do introduce these to them ultimate notions, namely, Mass and Energy (which may be taken as involving the higher notions of Matter, Force, Cause), Motion, Unity, Length of Time, and Configuration of Space. And I think I have made it sufficiently evident, that these ultimate notions, ultimate to the physical and mathematical sciences, are not ultimate in all respects. They are ultimate in respect that we can securely reason downwards from them, that is to say, construct valid definitions of them, and base valid demonstrations on them, in the physical and mathematical sciences ; but not ultimate in respect that we can analyse them still farther, reasoning upwards from them, and ascending to still higher generalities and greater abstractions. Their validity as the basis of science is sought and found in what lies below them, in the concrete objects to which they are to be applied. It is conceivable they should also have another validity as deductions, or cases, of higher abstractions, to which they in their turn would serve as a basis of validity and as concrete object-matter.

The question whether any such higher abstractions are discoverable is thus posed by the sciences themselves ; and the conditions of its solution are also laid down in the posing. We are required to find an answer to the questions, *What are* Mass,

Energy, Matter, Force, Cause, Motion, Unity, Length of Time, and Configuration of Space? And the conditions of solution are, that the answers shall be in terms which do not repeat again the things about which the question is put (the common logical requirement in all solutions), but shall consist of higher generalities or abstractions, which yet shall be really known to us (not fictitious), and shall thus present us with new knowledge about the things in question. In other words, the notions in question are to be analysed or resolved into elements more abstract than themselves, which elements, in composition, shall give us again the original notions.

Now in thus approaching the question whether any such higher abstractions are discoverable, every way but one is barred to us. We start from notions representing concrete objects of experience, and representing those objects already in the most general and abstract shape. We cannot therefore look for the answer in any objects of concrete experience, or in notions representing them; because this would be to go to notions less, instead of more, abstract and general. We must pass beyond all concrete objects of experience, and beyond the most general notions which we can frame of such objects; and we have to answer the question *What?* τί ἐστι; concerning these most abstract notions. Where, then, is there a limit to our thought within which we may have been confined consciously or unconsciously,—a limit which is now to be removed and give freer scope to thought; where has there been a restriction which it is possible to take away? If there has been no such limit, no such restriction, then we cannot take a step beyond where we are already; we are already at the end of our tether, and *every* road is barred to us. The ultimate notions of science are then for us the ultimate notions in every respect, and the question whether we can refer them to higher generalities is answered in the negative.

But it becomes clear on a little further reflection that there has been such a limit and restriction, a limit by removing which we can take a step in advance and reach a still higher generalisation, yet without passing into the region of fictitious entities. For we have hitherto been regarding the objects of our enquiry *as objects*, that is to say as endowed, some way or other, with an existence independent of ourselves the spectators of them; or, if we have made a reservation to the effect that these objects are after all only phenomena relative to the percipients, still we have not as yet made any use or application of the reservation. But now the moment is come at which the fruits of the reservation may be reaped. We find that we can analyse the ultimate notions of science still farther, by looking

upon them as phenomena relative to the percipients, and asking ourselves what features they possess in this their *subjective* character, in their character of states of consciousness as contra-distinguished from their character of objects, or portions of an objective world. We are thus simply taking the obverse aspect of the very same ultimate notions which we were dealing with before; and the result is a new, and subjective, analysis of those notions which in their objective aspect (in which they were the bases of the sciences) appeared to be unanalysable and ultimate.

It is found, on thus regarding them, that certain modes of Sensation in combination with pure spatial extension and pure time-duration are the constituent elements of each of these ultimate notions taken subjectively. And by pure spatial extension, and pure time-duration, I mean the space-*element* and the time-*element*, in and with which any sensation is felt. Every sensation without exception has a time-element; every sensation of sight and of touch has a space-element as well. And by calling this element *pure*, I mean that it is different from the sensation, and as different from it is unaffected by division, continuous, having no divisions of its own, but receiving them from sensation. The divisions of pure time and of pure space are given only by changes in sensation, and without these divisions of pure time and pure space we should have no consciousness whatever of time in lengths of duration, or of space in its configurations or relative positions of points, lines, or surfaces. We have also here the source of the notions of continuity and discontinuity; of quantity, which is the sole object of measurement; and of infinity, the notion of which is nothing but continuity without break, or abstracted from discontinuity.

To count a thing *once*, which is the notion of an unit, depends on that thing being distinguished by change of sensations from what precedes and follows it in consciousness, no matter whether that change is arbitrarily introduced by ourselves, as in the case of units of measurement, or not.

Motion requires change not of sensations simply, but of their position in space, taking place in succession of times.

Cause involves the notion of the inseparability of things previously regarded as separables. But to treat things as separables is to treat them *as if* one was before the other in time, whether their order of sequence may, or may not, be equally well reversed, and the things found to be simultaneous. Cause therefore requires the notion of sequence of sensations in time.

For the notion of Force (if it is held necessary to introduce

it into science in the character of a cause of motion), a peculiar class of sensations is required, that of muscular tension or effort, whether derived from efforts of our own which we feel ourselves, or from these carried over in imagination and attributed to objects which are or may be in opposition to ourselves.

Energy, if not explained by reference to force, is in that case simply a derivative of motion. It consists of changes in the position and motion of masses and parts of masses.

Mass, as remarked above, is nothing but matter scientifically treated.

And lastly, that solid resisting thing which we call Matter requires for its comprehension (speaking only of normal cases) sensations of sight in combination with those of touch and muscular tension. At any rate sensation (whether of sight, or touch, or both combined), but always in spatial extension, is the necessary and sufficient analysis of our notion of Matter.

It must suffice, in a paper like the present, just summarily to indicate the nature of the questions and answers which arise on passing onwards from the ultimate notions of science to their analysis as states of consciousness. As above I could do no more than enumerate the ultimate notions of science, without attempting to assign them with perfect accuracy to their respective places in science, so here I must content myself with indicating, and cannot pretend to demonstrate, the general nature of the analysis which these notions receive in philosophy. That analysis is a final one, in the sense that there is no further conceivable limit the removal of which would throw open another field, as the removal of the objective limit unbarred the entry into the field of subjectivity. The analysis is also an analysis of the *nature* of the things analysed, not an account of how they arise or what are their antecedents. Ultimate subjective analysis of the notions which to science are themselves ultimate,—such is the answer which I have to give to the question, What are the features which distinguish philosophy from science?

Up to this point, it will be observed, we have been occupied with the relation of philosophy to one class of sciences only, the physical and mathematical. When we come to the other classes into which the sciences are usually, and exhaustively, divided, a similar conclusion will be forced upon us. A *similar* conclusion, because in these classes of sciences, the Moral and the Logical, the ultimate notions which are their distinguishing and characteristic marks are already subjective; for which reason it is that these sciences are most usually treated as forming a part of philosophy as distinguished from science.

Interwoven as all the moral sciences are at every step with

those of the physical and mathematical series, yet their subjective character is everywhere predominant, and their objective subsidiary. They are *practical* in their character, that is to say, the comparative importance of motives to conscious beings, the comparative value of states of consciousness, is the chief matter of discussion and inquiry. Whatever notions we take as ultimate in any of them, whether (for instance) that of Justice and Injustice in Jurisprudence, of Wealth in Political Economy, of Beauty and Deformity in Æsthetic, of the Good of a Community in Politic or Sociology, of Good and Evil in Ethic,—these ultimate notions, ultimate in respect of the particular branches of science which are based upon them, are yet capable of a further analysis into elements, an analysis not indeed differing from what has preceded it in point of subjectivity, since both alike are subjective, but still an analysis more searching than would be strictly necessary for a definition which should afford a basis for a branch of science. I mean that, with less searching analysis and consequently less accurate definitions, the sciences based on them would be less perfect, but not therefore impossible.

In Logic again we have, as its ultimate basis, the three postulates known as the laws or principles of Identity, Contradiction, and Excluded Middle. Upon these the whole doctrine of Logic rests, and for its validity no more is requisite than the statement of them. They carry their evidence in themselves. They are in a precisely similar position to that of the ultimate notions of mathematical science. They have too, as being even more abstract than most, if not all of the latter notions,—they have immediately attaching to them the double attribute of subjectivity and objectivity. They are at once laws of things and laws of thought. At least if they should be finally held *not* to be immediately laws of things, the discussions which have been raised upon the point suffice to show the *appearance* of such a double character in them. But even in their case a further subjective analysis is possible, an analysis by no means requisite to assure us of their validity, but certainly requisite to ascertain their nature. This analysis is of the same general character as in the case of the ultimate mathematical notions. It is into some particular *volition* and *time;* that is to say, we must attend to some feeling, distinct from others, before we can say, This feeling is this feeling (A is A); This feeling is-not what is not this feeling (No A is not-A); and Everything is either this feeling or what is not this feeling (Everything is either A or not-A).

The several sciences then, in every case, yield us notions, their ultimate bases, which are susceptible of a further subjec-

tive analysis, whether these notions are themselves objective as in the physical and mathematical sciences, subjective as in the practical, or both at once as in logic. But besides these ultimate notions of the several sciences, there is yet one notion to be mentioned, a notion not peculiar to any one science, but common to all, and involved in the particular ultimate notions of each. This notion is that of Existence. Different as the three groups of sciences, physical, logical, and moral, are in point of subjectivity and objectivity, yet the notion of Existence is involved alike in all. Not Matter only but States of Consciousness also have existence; they are what they are and while they are. What, then, is the notion of Existence, and does it belong to science or philosophy to answer this question? It clearly belongs to philosophy; first, because the notion of existence is more general and abstract than any of the ultimate notions of the physical or mathematical sciences; and secondly, because subjective existence, a notion which emerges first in philosophy, is an included part of the general notion which embraces existence both subjective and objective. We may put these two reasons in somewhat different phrase. The subjective aspects of material objects exist, as well as the objects themselves; and states of consciousness, such as are the emotions, and feelings of pleasure and pain, which have no material objects, yet exist for the Subjects of them.

Subjective states and objective things, then, are both alike *existents*. But they stand in a somewhat different relation to consciousness. The objective things are the nearer of the two to the consciousness both of the individual and of the race, counting from the moment when he or it begins to philosophise; the subjective states are the nearer to the consciousness of both, counting from the epoch when sentience arises. We begin to philosophise having "objects" already formed in the mind; but there has been a process by which these objects have been formed, prior to philosophical consciousness, but not prior to consciousness generally. It is a case for the application of the maxim—What is last in analysis is first in genesis; and what is last in genesis is first in analysis. Thus it has long being observed and often repeated, that the distinction between the two kinds of existents, subjective states and objective things, is not perceived at the earliest stage of an individual's experience.

> "The baby new to earth and sky,
> What time his tender palm is prest
> Against the circle of the breast,
> Has never thought that 'this is I:'

> But as he grows he gathers much,
> And learns the use of 'I,' and 'me,'
> And finds 'I am not what I see,
> And other than the things I touch.' " *

When, however, this distinction is perceived, then both kinds of existents become objects to the percipient; and the perception of both, in their contra-distinction, is itself distinguished by the name of reflective perception as opposed to direct, and by that of self-consciousness as opposed to consciousness simply. It is this "moment" of reflective perception or self-consciousness which is the central and cardinal feature in philosophy, and that which, by enabling us to distinguish the subjective from the objective aspect of things, distinguishes philosophy from science by an inner and indelible characteristic.

The answer, therefore, to the question, What is Existence? can only be given, if at all, by philosophy. But what that answer will be, I am not now to discuss. In general terms it may be said that, for philosophy, existence means presence in consciousness; *esse* means *percipi;* and this quite generally, so as to include all the modals into which the general proposition may be thrown; as, for instance, possible existence designates what is possibly present in consciousness; actual existence what is actually present in consciousness; imaginary existence what is imagined as present in consciousness; necessary existence what is necessarily present in consciousness, and so on. For all the modes of existence there are corresponding modes of presence in consciousness, and without a corresponding mode of presence in consciousness we should have no knowledge whatever of any mode of existence,—neither what it was nor that it was. In short, consciousness itself is the subjective aspect of existence, and each in its bare generality is the ultimate and common feature of which all the modes of consciousness on the one side, and all the modes of existence on the other, are differentiations. In this most abstract and general character, their character as *summa genera* of modals, they are unanalysable into elements, consequently undefinable, and only so far capable of explanation as the two throw mutual light on each other. We know existence as consciousness, and to know that we do so is self-consciousness.

SHADWORTH H. HODGSON.

* Tennyson's *In Memoriam*, xliv.

VII.—PHILOSOPHY AT OXFORD.

No one looking at the books of the last ten or fifteen years can repeat the complaint that the English are indifferent to philosophy. Mill, Herbert Spencer, Bain, Lewes, Jevons, H. Sidgwick, the English translators of Comte, have issued volume upon volume—books which are not only printed, but circulated and read—and which have given rise to animated controversy. The widespread interest excited among us by philosophical discussion has no parallel in any other part of Europe; it would be impossible in Germany, which a short time since had the monopoly of speculation.

To this literature, Oxford has made contributions. But the university of Duns Scotus and Occam is no longer the *foyer* of Anglican speculation. The leaders of thought in England are outside us. We but participate in the thought process. It reaches us through the books which are written; which we read; which interest us a little on their own account; chiefly, in as far as they furnish material for examination papers.

Of this transfer of the speculative function, from the seat of learning to the capital, various causes have been assigned. The once reigning explanation, set on foot by Adam Smith and the economists, which ascribed it to the benumbing power of endowments, is no longer tenable in view of the surprising activity which Oxford has recently developed. The periodical press—daily, monthly, quarterly—is known to be largely in the hands of Oxford men. The *furor* for lectures and examinations, though here Cambridge takes the *pas*, is largely fomented by Oxford energy. And within the precincts of the place, at no period in our annals has the teaching of the young been so various, so extended over the elements of many branches, so carefully brought home to each individual student, as it is at present. The one thought of the leading spirits among us is how we can enlarge the field of our studies, and incorporate those branches of knowledge which still remain undomesticated in Oxford.

It is not then because philosophy is endowed here that it pines. For other things are equally endowed, and they do not decay in consequence.

The new school of economists have therefore inverted the doctrine of Adam Smith. For fifty years we meekly submitted to be told that we did nothing because we were overpaid. That idea took root, and flourished in the public mind. No sooner was it full-grown and about to bear fruit in disendowment, than it was found that the economists had changed their minds. Instead of too much money, it has been discovered

that it is the having too little money that has impoverished learning and science in the university. The new pamphlets, which discuss university reform on commercial principles, concur in one point, viz.: that more money spent on it is all that is wanted to make any subject whatever flourish and abound among us.

I for one cordially concur in desiring a redistribution of the endowment fund in our university. But I am not so sanguine as to think that any such redistribution would do anything towards raising a school of philosophy in this place, or in elevating our general studies to the point of contact with philosophy. The causes of the atrophy of philosophy here are not to be found in its being disendowed. Indeed, it inherits its share of endowments. There are the philosophical chairs, and it has the fellowships in common with any other pursuit. But as, taking the widest view of speculation, the theological chairs may fairly be counted as its opportunities, philosophical thought may be said to enjoy quite exceptional encouragement from endowments.

The truth is that whatever influence for good or for evil endowments may exercise over other branches of learning, philosophical speculation is of a nature not within the control of commercial cause and effect. The genuine philosopher is as Carlyle's hero. When you call for him he will not come, and, when he comes, we thrust him from us. Philosophical lore, learning in the history of philosophy, the literature of the subject, may be obtained on demand. Philosophy is like religion; it is a temper, a habit of mind—not so much anything *per se*, as a form under which we think our thoughts and live our life. Philosophical speculation, inasmuch as it implies an unaffected and unbribed interest in truth—truth useless and loved for the pleasure of contemplating it—cannot be had to order.

The cause of the decay of philosophical interest in the university is to be found in considerations of wider scope. I can do no more than very briefly indicate them.

The speculative spirit in Oxford has always been bound up with theology, and animated by religious interests. To go no further back than the first quarter of the present century; there existed at that period in the university a pronounced and independent movement of mind. This had its focus in Oriel common-room. This very select society had become such by having imposed a new test of qualification for admittance. Instead of attainments it required originality of mind. Intellect, not scholarship, was the mark of a Fellow of Oriel. Not only did it become the highest distinction in the university to be a Fellow of Oriel, but the fellows were really men

having an individual stamp. There was the widest diversity of opinion, and a fermentation of thought maintained among them, which was as a stimulating leaven in the mass of university torpor. Of course there was much disputatiousness, much "logomachy," much sophistry. But at bottom their intellectual effort went to sound and probe the sources of the thought and feeling of their age. Thus this effort was a truly philosophical effort, inasmuch as it sought to pass by the war of opinion to the causes of opinion. It was lamentably crippled, incomplete, shapeless. There was no light on this arena. The wrestling of these heroes was as the wrestling of men bound with chains in the vaults of a dark prison. A philosophy must be the concentrated expression of the life of the period. The thinking of these men did not amount to a philosophy, for they could not grasp in its totality the self-consciousness of their generation. The movement of mind, of which I speak, was not even a school, for it contained men of directly opposite opinions, and included Hampden with Keble, Arnold (Dr.) with Newman, Blanco White with Whately. What was wanting to these men was knowledge. They wanted a knowledge of the past, a knowledge of the present, and of the thread by which the present is tied to the past. They were imperfectly acquainted with the condition of their own England. Of Hegel or Schleiermacher they had never heard the names. Of Chateaubriand, de Maistre, or de Bonald they had probably never read a line. But they were themselves doing blindly and in a corner what Schleiermacher and Chateaubriand were doing in the full blaze of day. They were assisting at the resuscitation of religious sentiment, at the attempt to re-unite Christianity with the thoughts of the age. So the movement had this attribute of a philosophy, that it went down below the surface of popular opinion and sentiment in search of the principles on which such opinion and sentiment could be based.

This was the first stage of Oxford thought in the nineteenth century, which may be taken as occupying the first thirty years of the period.

Out of this *first* phase of intellect, which was neither a philosophy nor a school of thought, but a vague state of inquiry, arose the *second* which filled the second quarter of the century. This second phase is connected with the well-known name of Dr. Newman. In this second period the vague intellectualism of the previous generation had become a school. It had definite opinions, and worked in a prescribed direction. This—the Tractarian movement—was primarily a religious movement, and so far does not belong to the chapter of university history which I have undertaken to write. This movement presents

itself to the political historian as an uprising of the Church of England, a mere resuscitation of the Church spirit which had been dormant since the extinction of Jacobitism about 1760. And such, in fact, it was. Yet as far as our university interests were involved in it, this church movement was merely the outside form which was taken on by an intellectual movement. The agents of the church movement, little as they thought it, were determined by the secular process of thought which was working itself out through the theological controversy which raged from 1830 to 1848.

The best heads of the party, Mr. Ward, Mr. Thomas Mozley in the *British Critic*, above all, Dr. Newman, endeavoured not merely to justify their position by argument, but fairly tried to find the intellectual standing ground on which their *de facto* convictions rested. They did not like Blanco White re-examine these convictions in their essence, but they did try to go back to their logical antecedents. The first movement, prior to 1830, failed of being a philosophy because it had not breadth enough to compass and express the feeling of its generation. This second—the Tractarian—movement, fell still further short of being an adequate representative of the mind of the period. It not only did not comprehend its age, but it developed itself in antagonism to its age. The first period had tried, feebly and without knowledge, to formulate the thought of the time. The effort of Dr. Newman was directed to produce a principle which should counteract the popular prejudices. He sought not to expound and verify the elements of belief which were floating in his atmosphere, but to nullify and counterwork them. His intellectual effort was one, not only of re-action, but of counteraction. In an honest endeavour to get nearer to the truth of things than the conventional Philistinism of "liberal" politicians, Dr. Newman dug down and found a little below the surface the disused principle of "authority." Disgusted with the cant phrases of reform oratory of his day, he missed the deeper principle of Reason, which all the while lay below the surface of the Whig political tradition. He broke not only with the constitutional principles of 1688, but with reason. He threw off not only the scum of democratic lawlessness, but the allegiance which the individual understanding owes to the universal reason, and too hastily concluded that authority could supply a basis for a philosophic belief. Long before Dr. Newman gave in his adhesion to the Papal Church, the philosophic basis of his mind had anticipated the Syllabus and the Encyclical.

It is unnecessary to speculate on what might have been the next form of thought in the university, had Dr. Newman's school carried on the movement which he initiated and con-

ducted. The union of the principle of authority with unlimited freedom of metaphysical speculation has been tried before in the history of Europe, and has produced no riper fruit than chicane and mystification, the volatilisation of thought, casuistical probabilism, with the result of the general humiliation of the intellect in the presence of the practical wielders of power and wealth.

Such might have been the case had the movement conducted by Dr. Newman continued and developed itself logically. But it did not continue. It was arrested suddenly by events which belong to church history, not to the history of philosophy. When the leaders quitted the university and the national church the rank and file of the party were at first stunned by the blow. But this was only a temporary dispersion. They soon re-assembled their forces. Intellect was gone from among them, but on a review of their strength they found that its loss was compensated by numbers and discipline. What under Dr. Newman had been a school of theological thought, became in the next generation an ecclesiastical party. This is the *third* phase of the Oxford movement, and it is in the middle of this that we are at present living.

It has been necessary to retrace so much of our past university life in order to deduce the true cause of the present stagnation of philosophical thought among us. In the *first* period, 1800-30, there was free movement, but blind groping, working its way out of the mist of insular prejudice in which the French universal empire had enveloped the "nation of shopkeepers." In the *second* period, 1830-48, though the terms of the controversy were religious, there was yet a philosophical principle at stake, The controversy on "private judgment" involved, if it did not elucidate, the question of reason *v.* authority. The dispute as to the merits of the Reformation was not a mere theological quarrel, it inevitably carried the thoughts of the disputants to the ultimate criterion of belief. At any rate, as the warfare was conducted by the press, by argumentative pamphlet, or learned volume, there was life which was favourable to thinking. It may be quite true that theological discussion is never on the level of philosophical discussion, as it is always more or less coloured by party spirit, or affected by church interests, and that hence it is never regarded with the respect which is accorded to disputed speculation in any other field. Still discussion, even though contaminated by the impurities of party passion, is yet water from the well of mind. Discussion breaks up the stagnation of fixed opinions. In one of his latest writings Dr. Newman has described the ordinary state of the average Englishman's mind.

"Great numbers of men refuse to inquire at all, they put the subject of religion aside altogether; others are not serious enough to care about questions of truth and duty and to entertain them; and to numbers, from their temper of mind, or the absence of doubt, or a dormant intellect, it does not occur to inquire why or what they believe; many, though they tried, could not do so in any satisfactory way." (*Grammar of Assent*, p 380.) This sentence indicates with tolerable precision the scope and the limitation of the inquiry which Dr. Newman inaugurated. "To numbers from . . the absence of doubt, or a dormant intellect, it does not occur to inquire why, or what, they believe." That is, we believe something first, and then we inquire why we believe it. The *credendum* is given, and we are to find rational grounds on which to rest it. This is the limitation of Newman's religious thought. But it *is* thought, for it inquires. It inquires, indeed, not into truth, but, some propositions being assumed true, it desires a quasi-philosophical representation of them in the intellect. Any how intelligence is at work upon the mental content. This was the service Dr. Newman rendered to philosophy in Oxford. We may invert Bacon's dictum and say "a superficial religion leads away from philosophy, a deeper religion leads to it."

All this mental movement ceased with Dr. Newman's abdication. Instead of spiritual conflict through the press, the weapons of our warfare now are carnal and political. Discussion is extinct, and controversy has taken its place. Even of controversy there is little; the theologians have betaken themselves to denunciation. The university, with a democratic constitution, is under the terrorism of an ecclesiastical Ring, whose final triumph would be clerical domination. This disturbed atmosphere is obviously most unfavourable to speculative thought. The philosophic energy is of the nature of contemplation. It is always found to be in an inverse ratio to outward activity. It requires as its conditions retirement from strife, detachment from interests, above all mental freedom. It cannot be expected to exist in a place where the more active minds find themselves engaged in drilling minorities of resistance; where those who, forty years ago, would have been occupied in searching the fathers or schoolmen for arguments, are now the wire-pullers of a division in congregation or of an election to the hebdomadal council!

This diversion of energy from theological debate to platform intrigue and manœuvre is one cause of the weakness of philosophical speculation among us. But it is only one cause. Another and a weighty influence, which is secretly undermining not only philosophical thought, but the genuineness of all

study among us, remains to be noticed. This is the false direction of elementary teaching given to it by the system of honours and prizes.

It is sometimes thought that there is an essential connection between progressive knowledge and teaching. Beginners inevitably think so, for every beginner finds himself helped by going over and over the elementary ground. But after progress has reached a certain point, to be constantly dwelling upon the alphabet of the science, ceases to be a function of the understanding, and becomes mechanical routine. Now the prize-system as worked by us is a system under which the pupil is carefully excluded from contact with progressive knowledge, or knowledge in a state of movement and fermentation.

That teaching is not *per se* destructive of the love of knowledge may be admitted. It is sufficient to turn to the precedent of Germany in the last generation. The great manifestation of speculative intellect in that country, in the period which was closed by 1848, was professorial. Schleiermacher and Hegel, to name only two names, were eminently teachers. Did not Niebuhr apply to his class, Pyrrhus's words to his soldiers, "Ye are my wings!" And did not Gervinus write that "the best audience which a thinker can address, the richest soil which he can propose to himself to cultivate, is the ingenuous youth who fill our universities." Was it not the emulation of teaching, the mutual rivalry of the small universities, which stimulated the research of the biologist, or inspired the deep-musing idealist, in that heroic age of German leadership of thought which is now a past age? Every thinker desires to communicate his thoughts; and how much closer and more encouraging is the sympathy of disciples to whom you can speak than that of a public for whom you can only write!

But among us there is a zeal of teaching which is not inspired by progressive knowledge. The whole of the literary and philosophical teaching in Oxford is in the hands of young men—the tutors of the colleges. As a class these men abound when they begin life in energy and ability. They overflow with zeal, and the ambition to act upon their pupils. But the zeal is not the zeal of the enthusiastic votary of science, who sees a vista of infinite progress opening before him, and desires to associate younger minds in following up the track. The young teacher as turned out by us has never been on any such track. He is an honour-man and a prize-man; *voilà tout!* and he knows the sure road to make others win honours and prizes, the road by which he himself won them. Even if he has better aspirations, he must not indulge them. He is embarked on the career of teaching, at twenty-five, say; and he finds him-

self at once the slave of a great teaching engine, which drives him day by day in a round of mechanical work. There is no stepping aside; if you fall out of the ranks, you perish. Study, or research, or self-improvement, is out of the question. The most conscientious tutor has the least leisure for his own purposes, as he is most anxious to do justice to his pupils. The desire of knowledge in the tutor who has once entered the lists of competition with the other tutors, if he ever possessed it, first becomes dormant, and then dies out. The teacher must not lose a moment in teaching a subject, in searching out its foundations, in inspiring his pupils with a love for it, with a desire to pursue it in a spirit of thoroughness. He must crowd into the year and a half of preparation a miscellaneous assortment of ready-made propositions upon the leading topics of philosophy, history, politics, and literature. Our system has gradually become one which carefully excludes thoroughness. It is the exaltation of "smattering" into a method. If the teacher goes about to give instruction in a subject, the pupils fall away from him. Their instinct tells them that time so spent is time lost. Hence the prize-student never goes near the professors. Many of our professorial chairs are filled by eminent men, masters in their department, and willing to give instruction in it. The existence among us of such men is of incalculable value. Few as they are, they are the salt without which the university would indeed have little savour. But they are entirely outside the practical working of the Oxford schools. If there are any professors who undertake the work of preparing young men for the examinations, they act thus in the capacity of tutors, and are less sought after in this capacity than younger men fresh from the schools, whose zeal is more alert, and whose interest is fresher. It is a recognised fact that the younger tutors are better than the middle-aged men, and that advance in thought and knowledge creates a gulf between the teacher and his scholars, who carefully keep away from such men, as persons who cannot help them towards the attainment of a first-class. What the aspirant for honours requires is a *répétiteur*, who knows "the schools," and who will look over essays for him, teaching him how to collect telling language, and arrange it in a form adequate to the expected question. It soon becomes indifferent to the teacher on what subject he lectures. The process of training for the race is the commanding interest. Training, be it observed, not intellectual discipline, not training in investigation, in research, in scientific procedure, but in the art of producing a clever answer to a question on a subject of which you have no real knowledge.

Such being the general conditions under which teaching here is carried on, it is easy to see what must become of Philosophy. For speculative effort, there is no place in such a system. For an original thinker to stand forward to expound a philosophy, to demand of his followers habits of meditative thought, to rouse the spirit of inquiry, to offer a connected scheme of life and mind, or a synthesis of the sciences, would be impossible. He would lecture to the walls. A professor may write, and address the public, but this is not professorial action; it is not localised in Oxford more than in London where his book is published.

Speculative philosophy, then, of the first order has no place in our lecture-rooms. So my history of philosophy in Oxford seems to sum itself up after all in the laconic formula of the often-cited chapter in Olaus Magnus. But even under the *régime* of examinational tyranny under which we are living, all life is not extinct in our philosophical studies.

For such philosophical teaching as exists among us we must look to the "school" of classics, or "Litteræ Humaniores." We have in Oxford no "moral science tripos." Philosophy has no substantive existence of its own. It is an appendage of our classical training. "Classics" have always been the strength of Oxford education. They are still. Distinction in the final school of "Litt. Hum." is still the crowning ambition of a student's career. And it has been one of the best traditions of the place that in the study of the classics "things" were of higher value than "words." Even in the feeblest times we have held on as well as we could to the substance of the classical writers. Thus it has come to pass that of the great encyclopædia of Greek thought which goes under the name of Aristotle, we have never let go our hold on the Logic and the Ethics. I will not inquire how much of the vitality of these two subjects among us is due to the fact that the matter of them is eminently "examinable" matter. Every practical examiner knows that while it is difficult to frame a question that shall bind an examinee to a definite answer upon Plato, Aristotle possesses this useful quality in the highest degree. Be this as it may, the Aristotelian logic and ethics have survived among us, and around this branch of our classical reading has gathered what philosophical study we have. The prescribed philosophical curriculum as it stands at present is as follows:

Logic. The outlines of Moral Philosophy. The outlines of Political Philosophy. Under the head of Logic candidates are recommended to study the following subjects:—The nature and origin of knowledge; the relation of language to thought; the history of logic in Greece to the time of Aristotle; the theory of syllogism; scientific method, including a comparison of the methods of different sciences and the principles of historical evidence. Questions will be set in Trendelenburg's Elementa

Log. Arist. and in Bacon's Novum Organum. Under the head of Political Philosophy candidates are recommended to study the following subjects:—The origin and growth of society; political institutions and forms of government with especial reference to the history of Greece and Rome; the sphere and duties of government; the leading principles of political economy.

The following books are prescribed for the examination:—Plato's Republic, Protagoras, Phædrus, Gorgias, Laws 3, 7, 10. Aristotle's Nicomachæan Ethics, Politics. Locke on the Human Understanding, with either Butler's Sermons or Hume's Inquiry concerning the principles of Morals. The transcendental Æsthetik and Analytik in Kant's Kritik, and the Grundlegung zur Metaphysik der Sitten, with the two chapters of the Kritik der praktischen Vernunft, entitled severally Von den Grundsätzen, and Von den Triebfedern, der reinen praktischen Vernunft. (The above list of books is a list out of which the candidate is to choose three books, one of which must be Plato and one Aristotle.)

Candidates will be expected to show such knowledge of the history of philosophy, or of the history of the period of philosophy to which the philosophical authors offered by them, either as stated, or as special, subjects, belong, as shall be necessary for the profitable study of these authors.

The above are the requirements of the "classical" examination. In addition, the candidate *may* bring up as a voluntary supplement one out of the following special subjects:—

1. Aristotle De Anima.—2. The philosophy of the Eleatics, Heracliteans, and Megarians, with the Theætetus and Sophist of Plato.—3. The philosophy of the Stoics and Epicureans with the discourses of Epictetus, and Diogenes Laertius, b. 10.—4. The philosophy of Hume and Berkeley, with Berkeley's Principles of Human Knowledge, Alciphron, and Theory of Vision, and with Hume's Inquiry concerning Human Understanding.—5. Political economy, with one or more treatises to be selected by the candidate.

Whatever faults a fastidious critic might find in this bill of fare, at least he must admit that there is enough of it! If the Oxford curriculum contains all this, it must be mere calumny to say that philosophy has no place among us. There is enough here to fill up not merely two years, but ten years of any student's life! If there are classes of young men who are learning these things, there must also be teachers who are teaching them. Class-rooms which resound with these names, and handle these inviting themes, must be rich in interest of the loftiest kind, and must provide the best intellectual stimulant.

But the reality is very different from the show upon paper. The "special subject," which figures so large upon the programme, does not come into play at all. As a candidate can obtain his first-class quite as well without, as with, a special subject, it would be supererogatory to offer it. It would savour of presumptuous vanity in him to parade himself as an Admirable Crichton before the examiners with a pageantry of acquisition, which was useless for the sole purpose of the examination—that of awarding the honours. Besides, the special

supplementary subject cannot be offered unless the candidate has already presented a "third book"—itself an extra. The special subject then stands in the Calendar for ornament rather than for use.

Even after this gaud has been stripped off, and the "third book" with it, there remains a substantial quantum of "philosophy" in the examination, which must stop the mouth of the calumnious critic, who would charge neglect of the subject upon the university.

Let us look into the case a little more closely. For his whole preparation for this ordeal, the examination in "Litteræ Humaniores," the student has at most two years—academical years; many have only one and a half years. Philosophy is only a portion of what he has to prepare. Under the head of the "Histories of Ancient Greece and Rome," a table of requirement is presented, which I need not transcribe here, but which in compass of matter is not behind that which prescribes the philosophical apparatus. But history and philosophy are not the only employment of the student's two years, if he can afford two years. There is a third element called in the syllabus, "The Greek and Latin languages." It is true that this magnificent denomination shrinks, in the fact, to what the student calls his "texts." Now even if we allow that this part of his preparation has been spread over the first year of his college course, and even was begun at school, yet a large part of his two final years must necessarily be claimed by conning texts so difficult as the "Ethics," "Republic," Thucydides, Herodotus, Polybius, Tacitus, with the closeness and frequency which will enable him to dash off in three hours accurate translations of long passages from them at sight. And failure in this branch of the examination, it is generally held, though there is some difference of opinion and practice on this point, cannot be compensated by other merits. The "texts," therefore, besides the time demanded for them, constitute what we may call a preference mortgage on the student's industry. When all time thus claimed has been deducted, how little of the two years is left for the stowage of all that rich cargo of philosophy!

I wish to have it borne in mind by my readers that I am not now bringing under consideration the Oxford literary curriculum in its whole results on the mind and character. I am to speak only of that single element which enters into its composition under the name of philosophy. I have never, in the capacity of examiner, analysed the papers which are handed in in the examination-rooms as the results of these two years' preparation, without astonishment at the combination of scholarship, varied

knowledge, command of topic, and scientific vocabulary, which the candidates can bring to bear upon the questions! I have felt a thrill of awe at standing in the presence of such matured intellectual development detected in young men scarcely out of their teens! The thought has been inevitably forced upon me: If these minds are already arrived at this stage at twenty-one, where will they be at forty; surely these young men have used their time well, who in the third part of (say) two years have exhausted the process of human thought from Thales to Hegel; they can have nothing more to learn!

A nearer acquaintance, however, with the whole result of the system dispels the illusion. If from the papers we turn to the minds from which all this clever writing has emanated, we shall find no trace of any philosophical culture in them. The question, or thesis, is on a philosophical subject, but the process by which the question has been answered has been not a philosophical action of mind, but a purely literary or compositional process. Looking at the paper of questions which are set would be enough to convince us that they could not be answered by mere knowledge of the subject—such knowledge as could be acquired in the third part of two years. Quite another way must be taken in the preparation of the candidate. For two years the pupil is thus forced along a false road of study in which neither science nor philosophy encounter him. Memory is really almost the only faculty called into play. Were they facts with which the memory is thus charged, the inadequacy of the system would be apparent at once. But in the preparation for this examination, instead of facts, the memory is charged with generalised formulas, with expressions and solutions which are derived ready-made from the tutor. The first principle of philosophical, nay of intellectual, training, viz., that all should be educed from the pupil's own mind, is here inverted; all is poured into him by his teacher. The teacher does as much, and the pupil as little, as possible. The utmost that the student can acquire from the system is that he has learned to write in the newest style of thought, and to manipulate the phrases of the last popular treatise. This innocent *jeu de mots*, however, furnishes a favourite text for the ecclesiastical platform, on which we have Oxford "teaching" denounced as sceptical, infidel, anti-Christian. If those who hold this language wished really to secure the interests of sound learning in the university, they would direct their efforts not against "scepticism," but against the pretentious and hollow superficiality of the training for the philosophical school. Out of this training some few stronger natures may emerge unscathed. A still smaller number of the

most vigorous may even be braced by re-action against the oppression to which their minds have been subjected. But in the average Oxford prize-men we too plainly recognise the symptoms which indicate that he has suffered from the forcing-house; mental pallor, moral indifferentism, the cynical sneer at others' effort, the absence in himself of any high ideal. He knows of everything, and truly knows nothing. For him intellectual enjoyment is passed away; the taste for reading which he brought to college he has lost there; he has lost reverence without acquiring insight; he remains an intellectual *roué*, having forfeited the native instinct of curiosity, of which, as Aristotle says, Philosophy was born.

Philosophical initiative being thus crushed between the upper millstone of ecclesiastical terror, and the lower millstone of the competition machine, has its one refuge in literature. Oxford continues to contribute its share to philosophical publication, a share, however, in which translation or criticism greatly preponderate over original investigation. My report would not be complete without a mention of some of the books most recently published.

(1.) The first place is due to Mr. Jowett's translation of Plato,* a work of stupendous labour by one whose activity in other directions is never impeded by the drudgery of the desk. As a translation these volumes belong to the province of the philological critic. The introduction and appendices bring them into our catalogue of philosophical books. Among the "additions" which the title-page of this second edition speaks of, may be mentioned the criticism of utilitarianism in the introduction to the Philebus, and that of Hegelianism in the introduction to the Sophist.

(2.) Messrs. Green and Grose have reprinted Hume's philosophical works.† The introductory dissertation by the first-named editor is of such extent and mark as to call for substantive notice. I must express my regret that an introduction to another book should have been chosen as the vehicle of matter which is considerable enough to form an independent treatise. From a publisher's point of view an octavo volume, a reprint of a classic, is disproportionately distributed, when, of its 560 pages, 300 are occupied by the modern editor's words. From

* *The Dialogues of Plato* translated into English, with analyses and introduction by B. Jowett, M.A., second edition revised and corrected.—Five vols. 8vo. Oxford "Clarendon Press," 1875.

† *Hume's Philosophical Works*, edited with preliminary dissertations and notes by T. H. Green and T. H. Grose.—4 vols. 8vo. Longman, 1874, 5.

an editor's point of view, it is a doubtful recommendation of the author you are reprinting to erect against him an apparatus of hostile criticism so elaborate and destructive as Mr. Green's of Hume. The effect of this introduction, on the mind of the reader who has gone through it, is to convince him that he need never again look into Hume's *Treatise on Human Nature!* Lastly, from an author's point of view, it is certain that whatever reputation was to be earned in such a field, Mr. Green has foregone by hiding his talent in an introduction. He will hardly get credit for the amount of patient thinking, or for the labour of comparison and verification of passages in Hume, and in the discursive Locke, which he has gone through. It may be conjectured that the editor began with the mere intention of prefacing so much as was necessary to show Hume's relation to his predecessors, and that, once embarked upon this explanation, thoroughness of mind compelled Mr. Green to investigate Hume's position to the bottom.

The first impression created upon the reader of this introduction is that it is "an attack upon Locke." Thus impressed he will regret that the great Archegus of rational thought in England should be thus ungraciously treated by one of his own sons. Further study of Mr. Green's pages will lead him to see, that,if Mr. Green is ruthless in exposing Locke's inconsistencies, it is not for the sake of a triumph over Locke. Locke, indeed, comes out of the fire greater by all the pains here taken to find out once for all how far his system was self-contained, how far it went,where it stopped short. The reader will begin by siding with Locke against his critic. It will slowly dawn upon him that Mr. Green has a higher object in view than mere iconoclasm. This "introduction" is nothing less than a treatise on the insufficiency of empirical metaphysics, of the philosophy of experience. Locke, and Berkeley, and Hume are, each of them, only an historical point in the development of the theory of our popular logic, as represented in the present day by the school of Mr. Mill. It is the unstable and inconsistent character of the theory which is really the subject of Mr. Green's dissertation. He takes the most minute pains to show what each of the three contributed to the empirical theory; where they overstepped their premisses; where they made assumptions from which they had previously excluded themselves.

Hume's own work, according to Mr. Green, leaves upon the mind the impression of a much less serious attempt to undertake a constructive explanation than that of Locke. Not that Hume was merely trifling with the topic, but that his aim was rather to show the inconsistencies involved in metaphysical thinking as it stood in his day. He did not seriously affect to

be reconstructing knowledge on a basis of fact. We find in him much more of the ancient sceptic than of the positive philosopher. If there sometimes appears in him something of the charlatanry of his age in declamation against "metaphysical jargon" in the name of common sense, this is partly real, partly an ironical concession to popular prejudice. The modern positive philosopher seems to agree with Hume in that he plumes himself upon not going in quest of any "thing-in-itself" behind what appears to his senses. But all the while he does so, he is supposing a real order of things having a permanence and uniformity of its own quite independent of his perceiving it. This, which is the modern theory of the physical sciences, is very far from being Hume's position. Hume followed Berkeley in setting aside the material order; he went beyond him in annihilating Berkeley's supposition of the reality and knowability of spirit and its relations, including even the self-spirit. Under the disguise of an introduction, Mr. Green has in fact issued a declaration of war, from an idealist point of view, against the reigning empirical logic. To this challenge, Mr. Lewes's *Problems of Life and Mind* may serve as the ready-made rejoinder.

(3.) "The *prolegomena* which precede the translation have not been given in the hope, or with the intention of expounding the Hegelian system. They merely seek to remove certain obstacles, and to render Hegel less tantalisingly hard to those who approach him for the first time." Such is the modest notice by which Mr. Wallace (of Merton) introduces us to one of the most finished essays on a philosophical subject which recent years have produced.* Thinkers, at least in our day, are seldom good writers; many of them notoriously dark, awkward, illogical. In the case of J. S. Mill, indeed, the vigour and lucidity of the understanding was mirrored in the style. But the style wanted classical grace and literary polish. In Mr. Wallace's essay there was no scope for originality, but while there is no lack of vigour, the graces and amenities of composition have been studied as far as is compatible with the higher duty which a teacher owes to the matter which he has to impress.

What Mr. Wallace fears is true, that the Hegelian system is not made as clear as day by his *prolegomena*. The true Hegelian resents explanation. As the genuine Cameronian gradually narrowed the circle of the elect till it embraced only

* *The Logic of Hegel*, translated from the Encyclopaedia of the Philosophical Sciences, with Prolegomena by William Wallace, M.A.—8vo. Oxf. Clar. Press, 1874.

himself—"or aiblins twa"—so to the Hegelian disciple what has become intelligible is no longer a part of the true faith. And Mr. Wallace is almost intelligible throughout. A few flights into the region of hallucination may be allowed to an Hegelian expositor who wishes to preserve his credit with the elect, whose motto is "credo quia absurdum!" I do not suppose that any exposition can be devised that shall make clear the identity of thought and being, the central point of the Hegelian system. It can only be acquired by time and slow assimilation. It is, as Hegel himself said, like learning to walk upon our heads.

(4.) It was stated above, as a sign of the times, that interest in natural theology had almost died out. Mr. Jackson's *Philosophy of Natural Theology** must be named as an exception, though the theological character of the volume does not admit of more than a mention of it in this place. I may, however, add that, though a theological argument, it is one of most remarkable fairness. Mr. Jackson says of himself, "It was my most anxious wish and endeavour to be honest; to advocate what I thought true, without disguising the difficulties of my own conclusion, or assailing its antagonists by gratuitous insinuation." MARK PATTISON.

VIII.—THE EARLY LIFE OF JAMES MILL.

JAMES MILL was born on the 6th of April, 1773, at Northwater Bridge, parish of Logie Pert, county of Forfar or Angus.

The spot of his birth is not far from being a central point in that part of Strathmore, extending into the two counties Forfar or Angus and Kincardine or the Mearns, called "Howe of Angus," and "Howe of the Mearns." The strath or plain is four to six miles wide, and lies between the Grampians and a line of coast hills of much lower elevation.

Northwater Bridge is a bridge on the Northwater or North Esk, a river inferior to the Tay and the Dee but still a considerable stream, rising not far off in Glenesk in the Grampians and flowing across the county from west to east, entering the sea three miles north of Montrose. Of its various bridges, the oldest and most important is the one that gives the name to Mill's birth-place; a three-arch stone bridge built about two

* *The Philosophy of Natural Theology*, an Essay in confutation of the Scepticism of the present day, by the Rev. William Jackson, M.A., F.S.A.—8vo, Lond., Hodder and Stoughton, 1874.

centuries before his time, on the great central line of communication from the north of Scotland to the south; the bridge near the sea for the coast road being built only in the end of last century. The river is for a great part of its course the boundary of the two counties.

The parish of Logie Pert, a union of two older parishes, Logie and Pert, lies along the right bank of the North Esk, and is the last of the Forfar parishes northward. Across the river is Marykirk, lower down St. Cyrus—the coast hills and coast parish.

The account of Logie Pert parish in the old statistical account of Scotland was drawn up by the parish minister, Mr. Peters, in the year 1791. It is most careful and minute, and will enable any one to form a very accurate picture of James Mill's life and surroundings, both physical and social. The parish is about four miles long by three miles broad; it contained in that year a population of 999 persons. It was mainly an agricultural parish; but had also two bleachfields—Craigo and Logie, a small flax mill, and even a snuff mill, besides meal mills. There were also limestone quarries then largely worked. The river yielded a good supply of salmon. The land for agriculture was distributed among thirty-six farmers; five or six paying from £100 to £200 yearly rent.

Northwater Bridge became the name of one of the leading farms, of which the farm-house was contiguous to the bridge; an unusually large and good farm-house, of four rooms in length and two storeys in height. This was also in Mill's time an inn and posting-house, kept by the tenant of the farm. Right and left of the high road south of the bridge, there were other houses, perhaps fourteen or fifteen, making up a hamlet, the largest in the parish, with a population of seventy persons. Blacksmith, wright, mason, carrier, small grocer or merchant—were all found here; in addition to which were cottages attached to the farm, and let by the farm-tenant. One of these was a clay-built thatched cottage, a hundred yards south of the farm-house of the bridge, and on the same side of the road (right hand going south). It was some twenty yards off the road, and at right angles, the gable towards the road. It had two doors and three windows; the farthest door from the road was the entry to the usual two rooms of a cottage—"but an' ben." The other door entered a single room, the room next the road. This was the cottage where James Mill was born. In front was the kail yard or garden: behind that, running at right angles, was a similar cottage inhabited by the head labourer or manager of the farm; at the south end of that cottage was the byre

belonging to Mill's cottage.* Mill rented also a cow's grass; and the family continued to have a cow to the last.

The father of James Mill (also called James) was a shoemaker, and had a good country business, employing usually two or three men. Of his own previous history we know only that he worked at his trade some time in Edinburgh before settling in Northwater Bridge; and one tradition is that he built the cottage himself on ground belonging to the farm, and enjoyed it rent-free for a certain time in consequence. There are plenty of his name all over that part of Scotland, but the spelling varies, "Milne" being perhaps more common: his own name in the register of his son's birth is spelt so. The elder James Mill was industrious and steady in his calling, good-natured in disposition, pious and devout, but with no special claim to intelligence or any high mental quality. In the prime of his age he seems to have been in good circumstances, and to have saved money.

Mill's mother was Isabel Fenton, the daughter of a farmer in the Kirriemuir district of the country. Her exact parentage has not been traced, but there have long been a number of substantial farmers of the same name on the Airlie and other estates in that neighbourhood. In the thirteenth and fourteenth centuries the Fentons had landed property in the district, and were called the Fentons of Baikie. It is said that Isabel Fenton's father had fallen from much better circumstances, in consequence of joining in the Stuart rising of 1745. Forfarshire was the chief part of the Lowlands that was so infatuated as to take the field for the Pretender. The then heir of Airlie, Lord Ogilvie, led out a large band of tenants and residents, including, it is said, Isabel Fenton's father, who, with the rest, suffered severely by the ravages of Cumberland's troops, and was thenceforth a much poorer man. It is even said that he was himself a proprietor before 1745, but the circumstance is not verified. Isabel, at all events, looked upon herself as one that had fallen from a better estate. She was not taken direct from Kirriemuir to Logie Pert, but went into domestic service and resided in Edinburgh, where James Mill made her acquaintance while working there. Her character is difficult to rescue from various conflicting traditions. All admit that she was a proud woman; her pride taking the form of haughty superiority to the other cottagers' wives, and also entering into her determination to rear her eldest son to some higher destiny. She could do fine work, but was not in her element

* Before the cottage was pulled down, some twenty years ago, a photograph was taken, which preserves its appearance.

in the common drudgery of her cottage; she was given to the luxuries of the table beyond what her husband considered fitting. But it is the fancy of those that knew her that she was the source of her son's intellectual energy; although we can hardly obtain clear evidence of her possessing any superior powers of intelligence.*

The biography of James Mill requires a special notice of the tenants of the farm where his father's cottage lay. This farm, consisting of about two hundred Scotch acres, is on the Earl of Kintore's estate of Inglismaldie, and was commonly called "the bridge," or the "brig." The tenant was a member of the widely-spread and important family of the Barclays; in earlier times extensive proprietors in Forfar and adjoining counties, but latterly, for the most part, substantial tenant farmers. The lands of Ury were possessed by one branch of the family. The tenant—at the time of Mill's birth—died in 1794, leaving a widow and a large family, with whom James Mill was very intimate. The eldest son, who succeeded to the farm, Mr. David Barclay, was four years younger than Mill, and is the medium of much of our authentic information respecting him. One of the sisters, the youngest of the family, still lives, and is able to testify to some important events in Mill's early history.

The children of James Mill and Isabel Fenton were James Mill (1773), William Mill, two years younger, and a daughter, May Mill, two years younger than William. There are no family events to record for the early years of James Mill. He went, of course, to the parish school (in the centre of the parish) as soon as he was able to walk two miles and back. Of his schoolmaster I have heard no special accounts. It is a

* In 1840 Mr. Barclay wrote to John Stuart Mill, intimating that a property in Kirriemuir seemed to fall to him as his grandmother's heir; which may be taken as conclusive proof that she was a Kirriemuir Fenton. If we had the papers drawn up on this occasion, we should doubtless have her exact connections. Mill's reception of the news was characteristic. He would not take advantage of any mere informality in a will; but if there were a case, he would take any steps that might be necessary to secure the property for his paternal aunt's family, the Greigs. They took advice in the matter, but found that the genealogy was not, in their opinion, so fully made out as to justify them in risking a suit.

By desire of Lady Airlie, the minister of Lintrathen, Mr. Chree, furnished me with an account of the best known families of the name of Fenton in the Airlie district. One family possessed formerly a considerable property in Forfarshire. An anecdote, illustrative of Scottish life and character in the last century, is given by Mr. Chree, relating to a Fenton, tenant of Balintore, in Lintrathen: he was ejected by his landlord, at the instigation of the Earl of Airlie, for violently opposing the settlement of a former minister of Lintrathen.

matter of fair inference that his superior talent was unmistakably shown in very early years. In fact, James Mill could not have reached his seventh year without disclosing to the stupidest observer his superiority over the other children of his years. His talent was of a kind that the common school elements would make manifest. He must have been distinguished in all the three R's. He had voice and elocution for a reader, he was a neat writer, had abundant arithmetical faculty and an admirable turn for languages. His parents at home could not be ignorant of his powers. As a matter of course, the parish minister would soon learn that an extraordinary boy was growing up at the Northwater Bridge. His mother's ambition resolved that he should be a scholar; by her he was nurtured and petted, and exempted from all distracting occupation. It is a very rare thing, indeed, for a boy to live in a humble rural family, be he ever so scholarly, without having to take some share in manual occupations, either field labour or artisan employment within doors. I have received the most emphatic assurances, from good authority, that James Mill neither assisted in his father's trade, nor took any part in the labour of the field, whereby he might have been less dependent on his parents. He saw what was going on, contracted an interest in farming, but his own sole occupation was study. His brother William was put to work in the father's shop, and so continued till he fell a premature victim to disease.

After mastering the R's with a little English Grammar, Mill would enter the Latin class of the parish school; the fee at this stage 2*s* 6*d* a quarter. With the most humble tutorial assistance, and with his studious habits at home, he must have got on very rapidly: and, in fact, at ten or eleven years he would be at the end of the schoolmaster's curriculum.

It is much to be regretted that we have nothing but a few plausible conjectures to make up the history of his studies to his eighteenth year. It is as certain as it can be without positive contemporary registration, that he was sent to Montrose Academy, one of the good grammar schools of Scotland. He had, of course, to board in Montrose, and his education must then have been more costly; but his parents were able and willing to pay the expense. The Montrose Academy was once famous for Greek, being a preparatory school for the universities; and Mill here obtained, if not the groundwork, at least the finishing part, of the very good classical attainments that he carried with him to Edinburgh. But it is hopeless to inquire when, and how long, he attended the Academy; our evidence only suffices to make the fact itself indubitable.

We should not omit at this stage the assistance he received

from the excellent and able minister of the parish, Mr. Peters, his friend all through. It is within allowable conjecture that if the schoolmaster ever staggered under the pressure of Mill's rapid advances, Mr. Peters would come to the rescue; would help the boy over difficulties, lend him books both for scholastic purposes and for general study, and guide and encourage him in his aspirations. He would also advise his parents, and confirm them in their determination to set him apart for a student's career.

A passage in a letter written long after, in an interesting moment of his life, may be quoted here as the only existing testimony borne by himself to his early feelings: "My pleasure shall consist . . . . . in establishing to myself that name in the world for wisdom and knowledge which was the darling object even of my infant years to think I should one day attain; and which I know I do not deceive myself when I think that few men, at my years (31), have laid so good a foundation for attaining." The circumstances probably gave an undue warmth to his expressions on this occasion.

I now approach what appears to have been the most important event of his early career, his connection with the Fettercairn family.* The beginnings of this connection are hopelessly

* It is necessary to know a small portion of the family history of Sir John Stuart. The following particulars will suffice. He was a descendant of the great Stuart family. His mother Emilia Stuart, in 1752, married her cousin William Belsches, the heir of Belsches, of Tofts, in Perthshire. Her husband died the year after, leaving an infant son John Belsches. This son she educated for the Edinburgh bar. In 1775, when he was 22, he married Lady Jane Leslie, eldest daughter of the Earl of Leven and Melville. Two years after happened the event that lifted him to fortune. His mother, on the death of her uncle Sir William Stuart, in 1777, became heir to her grandfather Daniel Stuart, who was a man of wealth, but not seemingly in land. No estate is mentioned as transmitted; but in the same year was purchased by her the estate of Fettercairn, which had descended for generations in the family of the Earl of Middleton. An ancestor of Emilia Stuart Belsches had served in the army under William III., and in 1706 received a baronetcy; this title was now inherited by John Belsches. He was now Sir John Belsches, of Fettercairn, and his wife, Lady Jane Belsches. They had an only child, a daughter Wilhelmina, born in October, 1776. In 1797, Mrs. Belsches, the mother of Sir John, executed a settlement enforcing upon her son the name of his great-grand father Daniel Stuart, and he was henceforth Sir John Stuart, of Fettercairn, whence we have the name John Stuart Mill.

Sir John was elected member for Kincardineshire, in the Union Parliament, 1801; an occurrence that had an important bearing on James Mill's fortunes. He continued to serve in Parliament till 1807, when he was made a Baron of Exchequer, a promotion conferred for being a good adherent to his party. It was an honourable appointment (with a salary of £2000 a year), but the duties were light in comparison to those of a

obscure; but before stating the traditions bearing upon the event I will make a few preliminary observations.

A young man born on the banks of the North Esk, in humble circumstances, and possessing superior abilities, would, as a matter of course, turn his thoughts to the colleges at Aberdeen. The distance from Northwater Bridge is thirty-eight miles, an easy student's journey. The distance to St. Andrews is much greater, to Edinburgh more than double. The Aberdeen colleges possessed numerous bursaries open to competition, the exercise being a "version" or translation from English into Latin. A £10 bursary would pay all the fees and in those days cover half the maintenance of a student for the college session. Moreover, there were in the patronage of the family of Ramsay, of Balmain (in Mill's neighbourhood), four bursaries of £24 a year, tenable for four years: so that one was vacant every year. Such a bursary would pay the fees and give a sumptuous maintenance to the student. A boy so distinguished as James Mill could have been put forward to the patron as a candidate for one of these bursaries, and notwithstanding the claims of factor's sons, clergymen's sons, &c., would eventually have succeeded. Add to all this that the parish minister, Mr. Peters, was brother-in-law to Professor Stuart of Marischal College, in Aberdeen, and in frequent communication with the professor, who was a man of some property in Kincardineshire, and came every year to visit his brother-in-law; while it is known that he became well acquainted with Mill, and was useful to him at a later stage. The minister and the professor would certainly have discovered a way of sending him to Marischal College. The sons of the clergy and the farmers in that district, we know, went to Aberdeen; a younger brother of Mr. David Barclay studied there. Had it been proposed to send Mill to Aberdeen, he was quite ready to go in his thirteenth, or at latest, his fourteenth year. Starting at that age he would have kept abreast of every branch in the curriculum, and probably have been the first man of his year. That he was detained at home till his eighteenth year, to be then sent to the University of Edinburgh, shows that some powerful hand had interposed at an early stage to divert him from what I must deem his obvious and natural career.

Lord of Session; and although Sir John studied for the bar, he could scarcely have ever practised. He held the office till his death in 1821.

It is not easy to find out what sort of man Sir John Stuart was. Few people can give any account of him. He was not even honoured with a newspaper paragraph on his death. The popular tradition of the neighbourhood makes him out haughty and ill-tempered. Lady Jane was revered for every virtue. Sir John's steady attachment to James Mill seems his chief title to honourable remembrance.

The account given by John Stuart Mill (*Autobiography*) of his father's introduction to the Fettercairn family is a somewhat loose version of the statement made to him by Mr. David Barclay in a letter written after his father's death in 1836.* We do not possess that letter, but we know the substance; and we have Mr. Barclay's own words in another communication, which he made to the *Montrose Review* in the same year. It was to furnish a biography of his father, for the *Encyclopædia Britannica*, that John Mill applied to Mr. Barclay for information. He placed the letter that he received in the hands of Mr. Andrew Bisset, who with some assistance from Mill himself, composed the article. Mr. Bisset had the advantage of being locally connected with James Mill's birth-place, and of having independent information respecting his early days. I therefore accept his rendering of the circumstances of the introduction to the Stuart family as the best now attainable; although it is not so complete as we should wish. "Some pious ladies," he says, "amongst whom was Lady Jane Stuart (she was then 'Belsches'), having established a fund for educating one or two young men for the Church, Lady Jane applied to the Rev. Mr. Foote, minister of Fettercairn, to recommend some one. Mr. Foote applied to Mr. Peters, of Logie Pert, who recommended James Mill, both on account of his own abilities, and the known good character of the parents." Mr. Barclay's published statement is to the same effect. He was himself rather too young to have remembered the circumstances from personal knowledge of what happened somewhere between 1783 and 1790; his account is a tradition from the elder members of his own family. Mill would undoubtedly be brought to the notice of Sir John and Lady Jane Stuart, either by their own parish minister, or by Mr. Peters of Logie Pert. The house of Fettercairn is only five miles from Northwater Bridge. How far Lady Jane was associated with other ladies, and whether Mill was but one of several young men that received the same assistance, it is

* The following extract from John Stuart Mill's letter to Mr. David Barclay shows the ignorance of the family as to their father's early history:—

"The chief points are the time and place of his birth; who and what his parents were, and anything interesting that there may be to state about them: what places of education he went to: for what professions he was educated. I believe he went through a medical course, and also that for the Church, and I have heard that he was actually licensed as a preacher, but I never heard him say so himself, and never heard of it till after his death. I do not know whether it is true or not; perhaps you do. How long did he remain at the University, or prosecute his studies for the Church? The history of his connection with the late Sir John Stuart."

impossible to find out. We know that Lady Jane was reputed in her neighbourhood as foremost in every good work; and, if the educating of a promising youth to the ministry had come before her as a proposal, she would have readily taken a part in carrying it out; and we are safe in giving her the chief credit of obtaining for Mill the higher start that he gained, in being taken at a mature age to the University of Edinburgh, instead of going to Aberdeen as a mere boy, however precocious or advanced. As I consider it morally certain that the resolution to send him to Edinburgh must have been formed several years before he actually went, his going to Montrose Academy for a time might be a part of the plan; and his parents may have been partly relieved of the cost of this residence by Lady Jane, although the general opinion is that their own means were equal to the effort.

As there are no particulars to relate of his years at the Montrose Academy, we next enter upon his college career, in which, strange to say, there is considerable difficulty in obtaining even the external facts. The registers of the University were so imperfectly kept, that, so far as they are concerned, we are left in the dark on some essential points. I have obtained from Professor Masson every item that the University records can furnish, and shall try to turn them to the best account.

He first appears in the records in 1790: so that he entered college at the unusually advanced age of 17½ years. For this session he is entered in the Senior Latin Class (Prof. Hill), and the Senior Greek Class (Dalziel). That is to say, he skipped the junior classes in both Latin and Greek, and entered at once into the senior, which gave him the rank of a second year's student. I reserve my comments till I give his whole Arts attendance. Next year, 1791-92, he is entered for Senior Greek, Logic (Finlayson), Natural Philosophy (Robison). Third year, 1792-93, Senior Greek.

This is all that we obtain from the College books, and it lands us in more than one puzzle. Besides the omission of the junior classes in the Classics there is no Mathematics (Playfair), and, more marvellous still, no Moral Philosophy (Dugald Stewart). As we know that he was destined for the Church, the first thing to ask is, what attendances did this necessitate? It is curious that such a matter should be doubtful, but so it is. The Act of Assembly in operation at the time merely specifies a course of Philosophy corresponding to the course for the M.A. degree at each university; but, in Edinburgh, the M.A. degree was rarely taken, and the regulations for it at that time are unknown to me. The subjects of the usual curriculum for a degree in Arts are understood to be Latin, Greek, Mathe-

matics, Natural Philosophy, Logic, and Moral Philosophy. In Classics there were in all the universities junior and senior classes, but it may have been allowable to pass over the junior class if the student were sufficiently advanced to enter the senior, which Mill certainly was. Then as to Mathematics. I have heard, on good authority, that the subject was not, at that time, obligatory on students for the Church.* But that James Mill should fail to attend Playfair's classes seems to me very strange. With all his ability and devotion to study, and with the very best help that the Montrose Academy could give him, he could not have been so accomplished a mathematician as he was a classic. Moreover, to see him entering the Natural Philosophy class in his second year, without a previous mathematical course, is quite inexplicable. He might have had enough of geometry to enter the school of Plato, but certainly he had not enough to enter the school of Robison—the last of the adherents to the tough geometry of the *Principia*.

But it is when I look to the entry of his third year that I must express doubts as to the sufficiency of the record. It may be quite true that he gave a second unnecessary attendance on Dalziel's class, for Greek was his delight, and Dalziel was an admirable teacher, and seemed to notice Mill's aptitude; but that he should have attended no other class is wholly incredible. He must have attended Dugald Stewart this year: the Church never dispensed with Moral Philosophy; and, if it had, he would not have neglected Stewart. The power of Stewart's lecturing has been repeatedly celebrated; but by no one more than Mill. The following passage has already been printed; it occurred in a letter seemingly addressed, in 1821, to Macvey Napier, Jeffrey's successor in the *Edinburgh Review*: —"All the years I remained about Edinburgh, I used, as often as I possibly could, to steal into Mr. Stewart's class to hear a lecture, which was always a high treat. I have heard Pitt and Fox deliver some of their most admired speeches; but I never heard anything nearly so eloquent as some of the lectures of Professor Stewart. The taste for the studies which have formed my favourite pursuits, and which will be so to the end of my life, I owe to him."

* The late Professor Cruickshank, of Marischal College, had heard his colleague, Dr. Glennie, state that he remembered a discussion taking place in the General Assembly on the question whether students going into the ministry should be made to attend Mathematics. The smallness in the attendance in the Edinburgh Mathematical classes renders it very probable that students for the Church could dispense with the subject, the numbers being less than half of those attending Latin and Greek.

If we can satisfactorily challenge the completeness of the college records, as I think we may, we are then at liberty to suppose that Mill, in his first year, attended Playfair's Mathematical class, in addition to Senior Latin and Senior Greek, which were hardly sufficient to occupy his time. He may have attended Playfair's second class in the second year, along with Logic and Natural Philosophy, as well as Senior Greek, a voluntary attendance.*

Excepting his strong testimony to Dugald Stewart's fascination, which, no doubt, was the stirring of his own great philosophical aptitudes—"I, too, am a metaphysician"—we have not a shred of information as to his doings or feelings those three Edinburgh winters. From extraneous sources we know what Edinburgh was in those years; the local colouring—political, literary, and social—has been given in connection with many memoirs, as well as in the general history of the time. We can tell who were his distinguished contemporaries and class fellows; but let us first pass on to complete his college studies.

We have good cause to grumble at the bad registration of the Edinburgh University; but as regards Mill's subsequent

* The biography of John Leyden, Mill's contemporary and class-fellow, is of some use here. Leyden entered, in 1790, the Senior Latin and Greek classes, and, although his biographer does not say so, the college record shows that he attended Senior Greek with Mill, and Junior Greek also. In 1791 he took Logic (with Mill, of course), Mathematics, and Classics again. His third session he devoted to Moral Philosophy, Rhetoric, Natural Philosophy, and Natural History; thus, like Mill, finishing the Arts' course in three years. With this information we may fairly say that Divinity students found three years enough.

As to the Logic class, Leyden's biographer seems to believe that Professor Finlayson must have been an able teacher, from the number of able thinkers that passed through his hands. More particularly he remarks that Finlayson "recognised the native energy of thought and the assiduity of Leyden, and not only bestowed on him particular notice, but found employment for him in the preparing of other students, and acting as his own amanuensis." I take this to mean that Leyden assisted him in reading class exercises; a proof that Finlayson did not prelect merely (like Stewart and Robison), but gave the students work to do. That Leyden should have risen to the leading position in the Logic class of that year shows that James Mill, in those days, was disposed to hide his light under a bushel: an explanation is obviously wanted. The Logic class of the year following contained Thomas Brown, thus treading on the heels of Mill, and we are quite prepared for the statement (given in Brown's *Life*) that "Finlayson's approbation was decidedly expressed."

Mill might have followed Leyden's example, and taken Rhetoric in his third year, or even Natural History. I cannot account for John Stuart Mill's supposition that he may have studied in the Medical classes. Perhaps, in conjunction with Thomas Thomson, he may have attended the lectures of Black, which drew students from all parts.

studies at the Divinity Hall there is an incidental record, which gives us some real insight into his mental progress. His Divinity studies commence in 1794, and occupy four winters. The Theological professors we see were—Divinity, Andrew Hunter; Church History, Thomas Hardie; Hebrew, William Moodie. Of Dr. Hunter I am unable to speak; but the professor of Church History, Hardie, is cited by Mill himself, in his translation of 'Villars,' in terms of high praise. The passage there quoted does credit to Hardie's vigour as a reasoner. It is directed against ritualism and superstition. Hardie must have been of the stamp of Principal George Campbell, of Aberdeen, and his lecturing would probably be in keeping with Mill's intellectual phase at the time.

But what interests us most is the Librarian's Register of the Theological Library, which contains the titles of the works taken out by the students, with their names appended chiefly in their own hand. Here we have a clue to Mill's reading during those four winters. Of course he had other sources: he might have access at the same time to the General Library; and, besides his own private collection of favourite authors, he could borrow from other parties. Making allowance for all these, we can discern a marked character in his studies. The list of books taken out by him has been extracted by Professor Masson; and I here give it entire.

The first entry is for January 2, 1794; the book is not very legibly given. Jan. 20; Ferguson's History of Civil Society. Feb. 6; Alison On Taste. Feb. 13; Rousseau's Emile, vol. 1. Feb. 20; Emile, vol. 2. March 3; Cudworth's Morality. March 6; Gregory's Essays. March 13; Smith's Theory (of Moral Sentiments), vol. 1. April 3; Smith's Theory, vol. 2. April 10; Massillon's Sermons. April 30; Reid's Intellectual Powers. This last was probably returned in a week, and he would then leave town. No books are borrowed in the recess.

The second Divinity session (1794-95), shows the first entry in November 20; Ferguson's Philosophy, vol. 2. Without giving dates, I will quote the rest: Discours par Rousseau; Mélanges de Litterature; Hume's Essays, vol. 1; Jortin's Dissertations; Bolingbroke's Dissertations; Hume's Essays, vol. 2 (four weeks after vol. 1); Sermons par Massillon; Alison on Taste; Smith's Theory, vol. 2; Kames's Sketches; Theological Repository, vol. 1; Gregory's Sermons; Necker's Religious Opinions; Platonis Opera, folio; Hakewell's Apology (a very peculiar book); Campbell on Rhetoric; Platonis Opera; Campbell on Rhetoric (permission to have Plato and Campbell together); Ferguson's Essay; Oeuvres de Maupertuis; Hume's

Essays. This brings us down to August 12, showing that Mill resided in Edinburgh this summer, and was absent only in September and October, being then probably at Northwater Bridge.

The third session opens with the entry November 26, Oeuvres de Fénélon; Plato's Works; Ferguson's Philosophy; Plato's Works; Ferguson's Philosophy; Plato's Works (for six weeks an alternation of the two); Massillon's Sermons; Oeuvres de Fénélon; Massillon; Plato's Works; History of Man; Plato's Works—April 27, 1796, last entry of the session.

He has now made three full sessions in Divinity. His fourth and last might be what is called a partial session—two or three weeks, during which his principal duty is the delivering of the last of his prescribed discourses in the Hall. Only three entries occur:—December 26; Locke's Works, Vol. 2. December 29; Whitly on the Five Points. January 2; Abernethie's Sermons. The two last may have had some bearing on his discourses.

The foregoing list speaks for itself. Mr. Masson remarks that it is very unlike the lists of the other Divinity students. Mental Philosophy is the foremost subject of his choice: but it surprises us that he had not yet become possessed of such leading authors as Locke and Reid. There is also a beginning of his studies in Historical and Social Philosophy; a dead set at Plato; and an attempt upon the flowery vein of Massillon. He is already a fair French scholar.

A word or two now on his college companions. I doubt if there were ever at one time gathered together in one spot such a host of young men of ability as were about Edinburgh College in the last ten years of the century. Thomas M'Crie as well as John Leyden sat with Mill in the Senior Greek Class in 1790-1. Brougham was at college at the same time, although young, and must have then commenced his intimacy with Mill.* Jeffrey should have gone to Edinburgh College for his whole education, but seems to have attended only the class of Law. Whether Mill knew him here I cannot say. Thomas Thomson, the chemist, was a class-fellow, both in Arts and Divinity, and was all through life an intimate friend. Sir D. Brewster knew Mill, but their college careers only touched: Mill ended in the Divinity Hall in the year that Brewster began. Another of Mill's life-long friendships may have commenced here: Professor Wallace began to study in Edinburgh at that time, although mainly in the scientific classes. In the *Life of Con-*

* Brougham's flighty biography shows that he attended Playfair in 1792-3, Mill's third year.

stable is given an interesting sketch of his first start.* Among many other names of after-repute may be mentioned also Mountstuart Elphinstone. We may readily imagine Mill's conversational encounters with such men, but we have nothing to record as to facts. An Aberdeen life in the same years, would, I am sorry to say, have been a dull affair. They were the closing years of Beattie and Campbell in Marischal College; and the young men of the period were undistinguished.

Having thus presented his college life in unbroken narrative, because of the continuity of the recorded facts, I may as well go on to the date of his being licensed as a preacher, making use of the records of the Presbytery of Brechin, to which I have been allowed to refer. He finished the Divinity Course, in January, 1797, and had now to present himself to be taken on trial for license. The first entry in the Presbytery records is on the 19th of October, 1796, at which date he was allowed to make an appearance in anticipation; being introduced by his friend, Mr. Peters. At the subsequent meeting in December, notice is given by Mr. Peters, that at the next ordinary meeting, Mr. James Mill, student in Divinity, upon producing proper certificates, be admitted to his questionary trials. On the 1st of February, 1797, he accordingly appears; produces his certificate from the Professor of Divinity, that he had regularly attended the Divinity Hall and had delivered the usual exercises with approbation, and that his conduct had been suitable to his views. He was then subjected to questionary trials, or, as we call it, a *vivâ voce* examination, and gave satisfactory answers. Whereupon he had to be reported to the ensuing Synod, which had to authorise the Presbytery to proceed with the rest of his probationary trials. He is not mentioned again in the Presbytery books till the 28th of June, although in the meantime the subjects of some of his discourses must have been prescribed to him. He delivered his "Homily" on Matthew v. 8 ("Blessed are the pure in heart, for they shall see God"), and more interesting still his "Exegesis" (Latin) on the foundations of Natural Religion, "Num sit Dei cognitio naturalis?" The Presbytery is satisfied, and farther prescribes,

* Constable's description of Hill's book shop, in Parliament Close, where he and Wallace were fellow-shopmen, and which was frequented by the professors and clergy (Burns came there when in Edinburgh), can be used as a help in our imagination of James Mill's Edinburgh life. Most probably he here became acquainted with Wallace; and, at all events, their intimacy would bring him here. Wallace was an admirable mathematician, but was neither a metaphysician nor a sceptic. James Mill's sociability was much wider than his tastes and opinions.

as a "Lecture," the 14th chapter of John's Gospel. On the 30th August, he delivers the Lecture, together with his "Exercise in addition" on Galatians ii. 20 ("I am crucified with Christ," &c.). Both are approved of, and there are prescribed farther Revelation xxii. 14 for a popular sermon, the fifth century for a discourse on Church History, and the 23rd Psalm in Hebrew to be explained. On the 11th of October, he gives the popular sermon. An unexplained blank of a year occurs between this appearance and his next, which was the last. On the 4th of October, 1798, he is examined upon his knowledge of Chronology and Church History, and of the Hebrew and Greek languages, and was approved. [There is a curious want of tallying with the previous prescription]. "And the Presbytery having taken the whole of his trials under their consideration, Did and hereby Do unanimously approve and sustain them, and therefore after he had given satisfying answers to the usual Questions, and subscribed the Confession of Faith and Formula, *coram*, and after Act Eight of the Assembly, 1759 [directed against obtaining a church by Simony] was read to him, the Presbytery Did and hereby Do Licence him, the said Mr. James Mill, to Preach the Gospel of Jesus Christ. The Moderator [his friend, Mr. Peters] having given him suitable Directions, the above was intimated to him."

Being now qualified to preach, he would display his powers, in the first instance, in the churches of his own neighbourhood. Very few records of his preaching exist; but there is good evidence of his officiating in the church of Logie Pert. My informant, the last survivor of the Barclay family, distinctly remembers hearing him on one occasion; and knows of his preaching twice. She remembers his loud clear voice, which filled the church; that his text was from Peter; and that the generality of the hearers complained of not being able to understand him. Other traditions concur in regard to his unpopular style. Sir David Brewster said to myself, "I have heard him preach; and no great han' he made o't." His discourses would no doubt be severely reasoned, but wanting in the unction of the popular evangelical preacher.*

It is no easy matter to trace his movements and occupations from 1790 to 1802, in that part of his time not spent at college. That he acted as private tutor in various families must be received as a fact, but the particulars handed down are very confusing. The best attested of these engagements is that

* I cannot account for John Stuart Mill's uncertainty as to whether his father had been licensed to preach. I have been told by members of the family that their father's sermons were known to be in the house. What became of them no one can tell.

connected with the Fettercairn family. He certainly acted as tutor to Miss Stuart; of her he made mention in after years in conversation with friends in London. She was three years younger than himself; being fourteen at the time he went to college. In the year 1797 she was married, being then twenty-one; and we may reasonably suppose that her connection with Mill as a tutor may have ceased some time before that event. If she was done with him at eighteen, in 1794, he must have taught her soon after he went to college; either at Fettercairn House, in his vacations, or partly there, and partly in Edinburgh while attending classes.* At any rate it must have been at an early stage of his studies. She had reached an interesting age, and made a lasting impression on his mind. He spoke of her in later years with some warmth; putting it in the form of her great kindness to him; although, if we may believe the traditions, the first source of all the friendship displayed towards him by the family was her mother.

The romance that surrounds this lady is now well known. Lockhart gives the incidents of Scott's passion for her. In marrying the son of the banker, Sir William Forbes, she became the mother of James David Forbes, the distinguished Natural Philosophy Professor of Edinburgh. In the *Life of Forbes* is given her portrait along with her husband's; and one could easily fall into the opinion that her cast of expression and mind is what was reproduced in the philosopher, as he unfortunately participated in her constitutional delicacy. Beloved of so many gods, she died young.

It is thus certain that Mill resided for a certain time in the family as Miss Stuart's tutor: it is equally certain that the house was always open to him as a guest. He might walk across any day from Northwater Bridge to Fettercairn House, a distance of five miles, and he was counted upon when company were in the house.

But now as to his other tutorial engagements, say from 1795 to 1802. One tradition that deserves respect, as being supported by the evidence of Mr. David Barclay, and confirmed from at least one other source, is that he was for some time tutor in the family of the Marquis of Tweeddale. It happens that the present head of the family from his great age (being

* I gather from Lockhart's *Life of Scott*, that Sir John and Lady Jane Stuart lived for a long time secluded (that is, in their country house), but that several years before 1797 they resided in Edinburgh part of the year; no doubt to educate and bring out their daughter. Mill would thus be very much with them both in summer and winter during his first college years. He was therefore not a dependent upon their mere bounty.

born in 1787) would in that case have been his pupil. I took the liberty of writing to the Marquis, stating the tradition; he responded most courteously, and took pains to explain to me how his education had been conducted; from which it was evident that he never had Mill as his tutor. I am obliged, therefore, to regard this tradition as a mistake, although I cannot account for its origin.

One engagement, not mentioned in any tradition, I have been able to trace out by the assistance of a daughter of Professor Stuart of Marischal College (born in 1792, and still living), who distinctly remembers having seen James Mill in Aberdeen. This was to me an entirely novel circumstance. No one had ever heard him say that he had been in Aberdeen, or mention any fact that implied it. As the lady in question was the niece of Mr. Peters, and often visited his manse as a child, she probably saw Mill there; but she farther states that she knew him as tutor in Aberdeen, in the family of Mr. Burnet of Elick, one of the branches of the family of Bishop Burnet. At the time when I first received this information, one of the sons that would have been his pupils was still alive. From him I received this statement: "It is quite true that a Mr. Mill was private tutor in my father's family, whom I am aware my father held in high estimation, and kept up an intimate correspondence with for years afterwards, but I am sorry to say that my memory does not serve me sufficiently to give any reliable information, and I was not even aware of the Mr. Mill in question being the father of John Stuart Mill." That an intimate or extensive correspondence was kept up I should very much doubt; but if the letters are ever forthcoming they will be a valuable contribution to the biography, assuming that there is no mistake. A farther confirmation, however, occurs in Mill's own letters to Mr. Barclay, who had a brother that studied in Marischal College. Mill promises to introduce this brother to "his friends in Aberdeen." Now he might have had one or two friends in Aberdeen, without ever being there; but the unqualified plural seems to imply that he had made friends there by residence.

This tutorship must have been subsequent to his leaving the Divinity Hall in the beginning of 1797; for although he might have been tutor to families in the south while attending college, seeing that the high families often wintered in Edinburgh, he could not have been a tutor in Aberdeen so long as he was a student. His introduction to Mr. Burnet was, without doubt, through Professor Stuart. The professor's daughter relates a tradition to the effect that Mill threw up this appointment suddenly, owing to an affront given him at a dinner party; but

this cannot be received if we are to trust Mr. Burnet's own statement.

On the above supposition as to the time of this engagement, Mill would have been in Aberdeen after being a licentiate of the church; and I therefore thought it worth while to search the records of the Kirk Session of Aberdeen, in which a regular insertion is made of the preachers and texts every Sunday in the three parish churches. I found his friend, Mr. Peters, twice mentioned, but Mill's name does not occur. There were other churches, called chapels of ease, but their records I have not seen.

Thus the history of his tutorships, which must have been his first source of income, is left very vague; and so also is his local habitation, for a great part of several years of his life. He must have preached in Edinburgh, to have been heard by Sir David Brewster, whose time was divided between Edinburgh and his native place, Jedburgh, which was quite out of Mill's beat.

I will now present in one connected view the notices of Mill "at home," or in his family at Northwater Bridge. He would not reside there continuously any year after first going to college, but he was known to be there occasionally in vacations, and on longer or shorter visits.

Taking our stand about 1795, his father and mother were past middle age, and not "what they were." Perhaps as yet there was no failure in their circumstances, but the decline was not far off. William was twenty, and had for years been in his father's shop; another of his workmen is identified at that date, a married man, who lived apart from the Mills. These would probably be his usual complement of workmen; although it is admitted that he might have three men at work. The household would thus be made up of father and mother, James (when at home), William, and May (eighteen), on whom would fall a chief part of the housework, as well as the shoe-binding for the shop.

The west room of the house contained two beds along the right hand wall; in that room the mother hung up a canvass curtain ("cannass" it was called, being what is laid on the threshing-floor to keep the corn together); thus cutting off from the draught and from the gaze, the farther end of the room, including James's bed, the fire, and the gable window. This was his study; and the whole arrangement was vividly retained in the memory of contemporaries. Here he had his book shelves, his little round table and chair, and the gable window sill for a temporary shelf. He spent great part of his day in study. He had his regular pedestrian stretches; one

secluded narrow glen is called "James Mill's walk." He avoided people on the road; and was called haughty, shy, or reserved, according to the point of view of the critic. He went often in the evening to tea with the Barclays, being thoroughly at home there. Besides the minister, he had as friends some of the most important people in the parish, as for example, Lord Kintore's factor.

His meals were taken alone in his screened study; and were provided by his mother, expressly for his supposed needs. Among the other members of the family, who would take their meals in the kitchen, there is said to have been a line of demarcation on the score of rank, but authorities are not agreed as to how it was drawn. Some accounts represent the mother as having, in her dignified and luxurious fashion, a table apart; others say that she and her husband were at one table, and the workmen with the two younger children at the other.*

The latest recorded incident of his career in Scotland is his being defeated in his attempt to become minister of the pleasant parish of Craig, a long narrow strip of uplands lying on the coast between Montrose and the Bay of Lunan. Mill could have taken care of such a parish, and yet have found time for his favourite studies, working his way to authorship, and perhaps a chair in a university. The patronage was in the hands of the Divinity professors of St. Andrews, who might be expected to favour one of their own pupils; but in this case the contest turned upon other considerations. Mill was said to rely on Lady Jane Stuart, whose family, all-powerful in Fifeshire, might have influence with the St. Andrews professors. On the other hand the Rossie family (chief in the parish itself) preferred James Brewster, the brother of Sir David.

* I was somewhat pained to hear an intelligent old man, a relation, and the son of a journeyman, of James Mill, speak very strongly of his wife's luxurious as well as slovenly habits. On the other hand, the husband, in his rigid piety and simplicity, may have been unreasonably stingy. He regularly fasted on Sunday till he returned from church. It is not likely that the less strict members of the household would breakfast very sumptuously on Sunday mornings. He had an incontinent habit of whistling in a low "sough," while at his work; and the neighbours remarked that he was never known to give way to it on the Sabbath day. He was very strict in all observances of a religious nature; but as regards the discipline of the children, he and his wife were (in their eldest son's judgment) blamably lax.

In the dearth of characteristic illustrations of Mill in his home relations, the following anecdote may be excused. One day his sister coming to serve his dinner, found him inclining his little table to his lap. She exclaims, "Hoo can the things *sit* there?" He replies, "If they winna *sit*, try if they'll *stan'*." It may be going too far to interpret this as showing his early resolution to conquer Scotticisms, which he carried out in after-life with admitted success.

As the vacancy did not take place till June 1803 (by the resignation of the minister), more than a year after Mill left Scotland, the contest must have taken place in anticipation, and must have been virtually decided against him. It is said that the disappointment was the immediate cause of his going to London; a mere guess. Brewster was a man far more acceptable to an ordinary congregation than ever Mill could have been. With his friends, however, he would soon have found a parish. One third of the parishes were in the gift of the Crown, and Sir John Stuart's influence would have been enough to secure one for him. A. BAIN.

(To be continued.)

IX.—CRITICAL NOTICES.

Psychologie vom Empirischen Standpunkte, von DR. FRANZ BRENTANO, Professor der Philosophie an der K. K. Universität zu Wien, Erster Band. Leipzig, 1874.

THIS is a work which no psychologist should overlook. Its author is an obviously competent inquirer,—one both conversant with the investigations of others and capable of independent personal research. While belonging to the empirical school he shows his appreciation of its most distinguished masters, not by an unquestioning acceptance, but by a keen and continuous criticism of their teaching. Those from whom he has learned most are Mill and Bain, Fechner, Lotze, and Helmholtz; they are also those whose views he most frequently endeavours to correct or contradict. He has discussed in a most elaborate manner the important and comparatively neglected subject of psychological method; he appears to be well acquainted with the physiology of the brain and nerves, but, while sensible of the help which it may yield to psychology, decidedly opposes those who would base on it that science, and who either neglect or depreciate self-consciousness; he can fairly claim considerable novelty of doctrine, which is to a certain extent a merit even when what is new is not true; and, in a word, he occupies within the school to which he belongs a decidedly independent position. His style is clear, direct, and pleasant,—very unlike that in which German works on psychology are generally written. We hope the following analysis of his work, so far as it has yet appeared, may help to bring it more widely under the notice of British students of mental science. They will certainly not fail to find it interesting and instructive, even should they, like the present reviewer, deem not a few of its positions insufficiently established.

The work is to consist of six books. Two only are contained in the volume which has been published; the first treats of psychology

as a science, or, in other words, of its definition and method, and the second of psychical phenomena in general. Of the four books unpublished, one is to treat of the characteristics and laws of conceptions; another of judgments; a third of the emotions and will; and the last is to discuss how the physical and psychical in man are connected, and whether the psychical life can outlast the dissolution of the body. Our author has still, therefore, nearly the whole science of psychology to expound. It is difficult to see how he can successfully accomplish this, as he proposes to do, in another volume.

He defines psychology both as "the science of the soul" and "the science of psychical phenomena," but prefers the latter definition, because it involves no metaphysical presupposition, yet does not imply the non-existence of a spiritual substance underlying spiritual qualities. He insists strongly, however, that in one sense physics and psychology are not alike conversant with phenomena, since physical phenomena—the objects of external perception—are not in themselves what they appear to be, while psychical phenomena—the objects of internal experience—are just what they appear to be. His definition of what is at present meant by the soul—"the substantial support of conceptions and other states founded thereon which, like conceptions, can only be apprehended through inner experience"—is not one, perhaps, which will very generally command the assent either of those who affirm or of those who deny the existence of the soul as a distinct agent. In expounding his definitions he takes occasion to combat the view that there is a special science to treat of the relations between physiology and psychology,—a science called by Fechner psychophysics, and by Wundt physiological psychology. He argues that there must be disputes as to the boundaries between psychology and psychophysics on the one hand, and psychophysics and physiology on the other, no less than between physiology and psychology, so that once begun there can be no limit to the process of introducing sciences between sciences; and that the work assigned to psychophysics is work which neither physiology nor psychology can leave undone, since each must so far look to, and borrow from, the other. Does not this reasoning proceed on the assumption that psychophysics treats of the relations between two sciences, whereas it really treats of the relations between two classes of phenomena, bodily and mental phenomena? As phenomena cannot be multiplied *ad libitum*, the fear of being required to multiply sciences *in infinitum* is imaginary. Besides, neither Wundt, Fechner, nor any other person claims for psychophysics the honour of being an independent and fundamental science. All that is maintained is that the relations between body and mind are so manifold, complex, and important as to demand a comprehensive and methodical investigation, which, with its results, may as properly be designated a science as many other studies which no one hesitates to call sciences. Prof. Brentano also objects to the celebrated summary of psychological problems given by Mr. Mill in his *Logic*, B. VI., ch. iv., that it omits the question which had the greatest interest

for the older psychologists, viz., that of the immortality of the soul. He himself holds that psychology has "a special and incomparable interest" because to it falls the duty of instructing us as to immortality, "as to the hope of another life and participation in a more perfect state." Few British psychologists of any school will agree with him on this point. Ever since psychology has come to be treated among us as a branch of inductive science it has been acknowledged on all hands that the belief in immortality must be rested mainly not on psychological but on moral and religious considerations.

Our author devotes the next three chapters to the method of psychology. He first insists on the interest and importance of the subject, and then indicates and characterises the sources of psychological experience, viz., internal perception; memory; external expressions and signs; the study of simpler minds in children, savages, those born devoid of particular senses, and animals; the observation of mental diseases; and the study of extraordinary products of mind, great or singular events, remarkable persons, &c. (ch. ii.) In regard to internal perception he takes up a position which he claims to be entirely original. He maintains that internal perception is the primary source of our knowledge of mind, but that internal observation is impossible, as the objects of internal perception fade away when attention is directed to them; that Comte in France, Maudsley in England, and F. A. Lange in Germany have rightly held that there can be no internal observation, but wrongly inferred that there is no internal perception. The worst consequences, he thinks, have flowed from the neglect of this distinction. Many have been deterred from the study of mind at the very outset by finding themselves incapable of a process which they were taught to regard as of essential importance but which is inherently impossible; others who have persevered have been led to take physical phenomena, such as belong to the phantasy, for psychical. Professor Brentano does not seem to his present reviewer to have established his conclusion. Probably a stronger case could be made out against external observation than he has drawn up against internal observation, owing to the very great difficulty there is of showing that the mind ever gets fairly beyond itself, ever has anything else than its own states to which it can attend. And, perhaps, it would not be difficult to show that in order to render his own view plausible, he has been compelled to confound physical and psychical phenomena at least as badly as the psychologists whom he censures. At the same time, we readily acknowledge that on a subject so important as the question whether internal observation is possible or not, a view at once new and reasoned, like that of Brentano, is profitable to science even although erroneous. It is an advantage that psychologists should have the possibility which it presents distinctly before them and be forced to take it into account. We should be glad to see it receive in the pages of MIND a separate and adequate examination, and regret that we must here leave it undiscussed.

The third chapter treats of the induction of the most general psychical laws. The affirmation of Bacon that the mind ascends gradually from the lowest to the highest laws is denied; it has not been found true in the natural sciences, and is not to be accepted in psychology. We are told to seek the principle of the primary division of psychical phenomena, and of their distribution into fundamental classes, without which it is vain to attempt to discover their laws of succession, in the consideration of their general characteristics. The circumstances which facilitate their classification, such as the indications afforded by language, the obviously small number of genera, and the presence of them all in the individual mind, are pointed out. Then, the difficulty of classifying them, notwithstanding these advantages, is dwelt on and traced wholly to a single source,—the impossibility of inner perception becoming inner observation. This, according to Brentano, is the cause why psychologists differ so much as to what are the fundamental classes of psychical facts. We must decidedly dissent from this view. The true causes are to be sought in the phenomena themselves. They are, perhaps, chiefly these two: first, the difficulty of distinguishing and the impossibility of defining ultimate facts of any kind; and, second, the indescribable variety of forms in which the ultimate facts of mind manifest themselves. The latter is the more influential. It is not difficult to distinguish a particular thought from a particular feeling, but it is enormously difficult to find a distinction or distinctions which will hold not merely between some particular thought and some particular feeling, but between any and every thought and any and every feeling, between thought as thought, and feeling as feeling, owing to the countless forms, shades, changes, and combinations, of both thought and feeling. In confirmation, I may refer to the fact, that of the eight distinctions which Dr. Fleming, following the guidance of M. Paffé, has laid down in his *Manual of Moral Philosophy*, as discriminating thought from feeling, no fewer than seven are untenable for this reason. They distinguish some thoughts from some feelings but not all thoughts from all feelings. After remarking on the difficulty of psychical analysis, our author devotes the rest of the chapter to showing that the highest laws of the succession of psychical phenomena are of a merely empirical character, and that a more thorough investigation of their physical conditions is greatly needed, while it is vain to attempt to resolve them into or deduce them from physical laws. He subjects to a most trenchant criticism the attempts of Horwicz and Maudsley to base psychology on physiology. The former, it seems right to mention, has vehemently protested against the representation given of his views (*Phil. Monatshefte.* Bd. x. H. 6-7), and Brentano has replied (Bd. xi. H. 4).

The main subject of the last chapter of the first book is the want of exactness in the highest psychological laws. The views of Kant, Herbart, and Wundt as to the applicability of mathematics to psychical phenomena are discussed, but not with the thoroughness

desirable. The attempt to refute the opinion of the last that the fact of psychical phenomena differing in intensity must facilitate their reduction under the sway of mathematics is particularly insufficient. On the other hand, the criticism of Fechner's statement of Weber's law is both ingenious and suggestive, and seems to prove that the only psychical phenomena which can be brought under that generalisation—those which are excited in the senses by external causes—can be so only in an imperfect and relative manner. While the difficulty of raising psychology to the rank of an exact science is brought into due prominence, induction is at the same time maintained to be capable of rising to laws of comprehensive generality from which special laws may be reached by means of the deductive and so-called inverse deductive or historical method.

The Second Book begins with a chapter "on the difference between physical and psychical phenomena,"—a subject which is rightly judged to deserve a thorough investigation, both for its own sake, and because the views of psychologists regarding it are so confused and discordant. Brentano starts in his investigation from the position that every psychical phenomenon either is an act of conception or presupposes an act of conception, the term conception (*Vorstellung*) being understood to comprehend whatever appears as an object to the mind in perception, apprehension, imagination, or abstraction. He combats the counterposition that there are feelings which rest on no conceptive basis. He defends the negative distinction between physical and psychical phenomena, viz., that the former are extended and the latter unextended, first against those who deny that all physical phenomena are extended and next against those who deny that all psychical phenomena are unextended; and, at the same time, maintains that Bain errs in supposing that there is no property positively characteristic of all psychical phenomena. What he calls the *intentionale Inexistenz* of an object—the dualism of subject and object in consciousness—appears to him to be at once common to all psychical phenomena and exclusively peculiar to them. Other distinctions are that psychical phenomena are only perceived directly through inner perception and physical phenomena only through external perception; and that the former alone have an actual, while the latter have a merely phenomenal existence. The distinction drawn by H. Spencer that psychical phenomena only appear one after another, whereas many physical phenomena may co-exist, is rejected. The general impression which this chapter leaves on the mind of the reviewer is that a considerable number of its particular criticisms are just, but that the discussion as a whole is not successful, because these two essential questions are uninvestigated, viz.: Are perceptions not so inseparable from the act of perceiving as to be, in some measure at least, if not entirely, *psychical* phenomena? and, Are there really any such phenomena as those which our author frequently speaks of, any "*physical* phenomena in the phantasy?"

Three chapters on "internal consciousness," which is surely a

pleonastic expression, come next. The second chapter is a most interesting and elaborate discussion of the question, Are there unconscious psychical acts? put very unnecessarily in the paradoxical form, Is there an unconscious consciousness? Our author, after examining all the facts and arguments which have been adduced in favour of an affirmative conclusion, answers with a decided "No." As we have space neither to summarise nor criticise his arguments we have no right to express an opinion on his conclusion, but we may be allowed to say that no one should henceforth venture to treat of the subject of unconscious mental modifications without a careful study of this important chapter. The one which follows is an attempt to explain what is implied in consciousness. The simplest psychical act is maintained to have a twofold object, a primary, as, for example, a colour or tone, and a secondary, as, for example, seeing or hearing, and the consciousness of this secondary object is maintained to be essentially threefold, or, in other words, it realises itself as conception, judgment, and feeling. This strange analysis supplies Brentano with the principle of his classification of psychical phenomena. The fourth chapter is a defence of "the unity of consciousness," the expression being understood to denote neither the simplicity nor the indivisibility of consciousness, but merely the fact that however numerous, complicated, and developed our psychical acts may be, they are always given in consciousness as the acts of one real being. He refutes the arguments of F. A. Lange and C. Ludwig against the unity of consciousness in this sense.

The last five chapters of the volume are all devoted to one subject—the distribution of psychical phenomena into their fundamental and most comprehensive classes. There comes, first, a survey of the chief classifications which have been attempted from the time of Plato downwards (ch. v.); next, a brief general exposition of the classification proposed by the author himself, which is into phenomena of conception, judgment, and love and hate (ch. vi.); then, the endeavour is made to establish and defend this classification by proving, on the one hand, that conception and judgment are two fundamentally distinct kinds of psychical acts (ch. vii.); and, on the other hand, that there is no essential or primordial distinction between feeling and will (ch. viii.); and, finally, the three classes of phenomena are referred to the three moments of internal consciousness, and their natural order and relationship to one another are determined (ch. ix.). Prof. Brentano does not conceal that he is proud of his classification, and seems to derive considerable enjoyment from anticipation of the *Kopfschütteln* which he foresees it will occasion. That is fortunate, because, we fear, there are likely to be more shakes than nods for what is original in it. The reduction of feeling and will to the same class of phenomena will, of course, command the assent of those who have already reached that conclusion; but it will probably convince few who have accepted the generally received threefold division of mental attributes into intellect, sensibility, and will, only after a careful investigation of its grounds. The really distinctive feature of the

classification,—the radical separation of conception and judgment,* —is almost certain to meet with extremely little commendation. The ingenuity displayed in its defence is considerable, and no one who follows the laboured course of argumentation in chapter vii. will accuse the author of having taken up without long deliberation the position unhappily suggested to him by certain observations of J. S. Mill on the nature of predication and belief, yet a large part of that argumentation must appear to the majority of his readers logically to tend towards a conclusion directly opposed to that which he has drawn from it; to imply that the distinction between conception and judgment, whenever they are properly correlative, instead of being great and fundamental is about the smallest and vaguest which can exist between any two acts that can be distinguished at all; to indicate that a conception is only, as has been said, a contracted judgment, and a judgment only an expanded conception. Then, as to the portion of his reasoning which is relevant, few will be disposed to accept the views as to the nature either of conception or judgment on which it is founded. He congratulates himself that they have led him to original conclusions in Logic, which he promises to expound in a special work, after the completion and publication of his Psychology, but these conclusions are so very original indeed that they are far from likely to lessen any distrust which may have been already awakened by an examination of their principles in themselves. Among them are the following:—1st, *Every syllogism has four terms;* 2nd, *A negative conclusion must have two negative premisses;* and 3rd, *Even when the conclusion is affirmative one of the premisses must be negative.* If these doctrines can be made out, obviously all logicians from Aristotle downwards have been sheer impostors, but the probability is great that they cannot be made out, and that the views as to the nature of conception and judgment from which they have been derived are erroneous. We shall look for Prof. Brentano's Logic with the most lively curiosity, and we very cordially wish that he may bring to a prosperous conclusion the Psychology which he has, in some respects, so happily begun.

R. Flint.

F. Lussana e A. Lemoigne: *Fisiologia dei Centri Nervosi Encefalici.* 2 vols. Padua, 1871.

The immense activity in all the schools of Europe which has, since Gall, been directed to the study of the functions of the brain, has produced but very meagre results. This is no doubt greatly due to the extreme complexity of the cerebral mechanism and the

* As regards conception, our author is unfortunate in his language. His use of the term *Vorstellung* is extremely vague, confused, and self-contradictory. It is wider and looser even than Herbart's or Lotze's. In fact, the term, as employed by him, is not only incapable of accurate translation into English or any other language, but, corresponds to no generic fact, no peculiar faculty, and no distinctive province of mind.

delicacy of its elements—two conditions which greatly interfere with experimental research; but it is also due to an imperfect conception of the principles which should guide such research. To suppose that organs which normally respond to stimuli so delicate and variable as the waves of molecular movement excited in a semifluid nerve, will reveal their normal functions when lacerated, pricked, galvanised, &c.—or to suppose that slicing away portions of the brain will yield more than negative evidence, and that needing very rigorous control, is to obstruct research with facts which obscure our vision, instead of illuminating it. Amid the mass of experimental evidence with which cerebral physiological literature is crowded there is extremely little which has any value; and yet it is only by experiment, rightly conducted and interpreted, that we can hope to complete and control the subjective analysis of Psychology. Physiologists and psychologists must converge their efforts. This is daily becoming more recognised. Meanwhile there is this drawback: physiologists are too much under the influence of traditional dogmas respecting Intelligence, Sensation, Volition, &c., and psychologists lend too willing an ear to the statements of physiologists, accepting with too easy a faith the premature conclusions of unverified research. Instead of meriting the old reproach of neglecting the physical basis of mind, the psychologists of to-day, for the most part, seem to me only too credulous of what physiologists tell them respecting that basis; and the successors of men who explained mental phenomena in supreme disregard of the nervous system, are now localising these phenomena in 'cells' and 'convolutions,' in supreme disregard of all the rest of the organism.

We are still a long way off a satisfactory theory of the brain; we have not even mastered its anatomy. Meanwhile every work is welcome which brings any positive evidence or suggestion; and such a work is the one which I wish to introduce to the readers of MIND. Had the scientific journals been sufficiently alert, I might have been spared the trouble; but although this work has been four years before the world, and although it was crowned by the Belgian Academy, and therefore carries its credentials with it, the mere fact of its being written in Italian seems to have excluded it from notice. I do not remember to have seen it once mentioned in any English, French, or German periodical.

The first volume is devoted to the cerebrum and mesencephalon. The authors begin by calling attention to the very different results which are observed during what they call the first and second experimental periods: the first comprising that variable period of hours, days, and even weeks, during which the animal has not recovered from the perturbations produced by the operation; the second, which they justly regard as the only significant period, is that in which the mutilated organism has once more returned to something like its normal activity. Neglect of this distinction causes many contradictory facts to be brought into the discussion. Making no allowance for the shock of the operation, for the anæmia, local congestions, and turbulent sensations, which follow removal

of the cerebrum, experimenters attribute all the phenomena they observe to the simple absence of cerebral agency. Hence the general agreement among physiologists that the cerebrum is 'the organ' of sensation and volition; and that its removal is followed by a somnolent stupidity and absence of spontaneity. It *is* thus followed. But only during the period of perturbation. Birds, reptiles, and fishes which survive this period and enter on the second period, show that after removal of the cerebrum there are still sensations, instincts, volitions and spontaneous movements having precisely the same character as those of unmutilated animals. The experiments of our authors, and their criticism of the current interpretations, are well worthy attentive consideration. They first expose in detail what are the observed facts consequent on particular operations; and having thus laid an experimental foundation, they attempt to draw conclusions from it. They show what are the effects of removing the hemispheres, first on the intelligence, then on the sensations, then on the movements and volition.

They next pass to the effects of unilateral removal on unilateral perception: as, for example, the blindness of the left eye after removal of the right hemisphere. Removal of both hemispheres does not destroy the *sensations* of sight—as they and others have proved; but although the animal can *see*, and avoid objects, after loss of both hemispheres, it cannot *perceive* the objects; and the blindness of the left eye is therefore shown to be a blindness of perception.

A brief, and not very trustworthy chapter on the histology and development of the brain succeeds. To this is added a good account of the olfactory lobes; and a survey of the structure of the brain in fishes, reptiles, birds, mammals, and man. In the general considerations with which the authors sum up their exposition of the cerebral functions, they adopt what may be called a phrenological stand-point, though they speak with contempt of phrenologists. Instead of lumping together all instincts under one indivisible principle, and all intelligent actions under one indivisible intelligence, they insist on distinguishing the concretes expressed in these abstractions, and endeavour to localise by experiment the organs operative in each. Whereas Flourens, on the faith of his experiments, maintained that when one sensation, one instinct, one volition, one intelligent act vanished, all vanished, and when one re-appeared all re-appeared, our authors abundantly show that some sensations and some instincts, nay some intelligent acts, disappear while others remain.

The relations of the optic thalami to motion and vision are then examined; and to this succeeds a chapter on the corpora quadrigemina. A survey of the mesencephalon throughout the vertebrate division concludes the first volume. The second is devoted to the peduncular system (which the researches of Meynert have lately brought into prominence), and the cerebellum; concluding with a critical examination of the chief theories propounded in explanation of the cerebellar functions. The mass of experimental evidence here adduced will some day be of great service to physiologists; but

at present we are still without the guiding conception which can enable us to interpret the evidence. All that we can learn meanwhile is the kind of disturbance produced in the mechanism when certain parts of it are injured or removed. In this way the observations of our authors are significant in the case of the dove which they kept alive three years and a-half after complete removal of the cerebellum; in this bird all the normal instincts were observed *except* the sexual, and all the normal activities *except* that of muscular co-ordination of the limbs and trunk.

It being simply my purpose to call attention to this work, I abstain from all criticism of its statements and opinions, which could only be ventured on profitably in a more elaborate notice. One remark is all that I will add, namely, that negative evidence is not to be confounded with positive evidence: in other words, that the observation of some function being perturbed or destroyed after the injury or destruction of a part of the brain, is no more evidence that this part is the 'organ' of the lost function, than the disturbance or cessation of a complex mechanism when a pin or wheel is removed, proves the pin or wheel to be the mechanical agent. But on the other hand, the continuance or re-appearance of a function after the destruction of a part, is positive evidence that the part in question is not the organ of this function.

G. H. Lewes.

Clinical and Physiological Researches on the Nervous System. (Reprints). No. 1.—*On the Localisation of Movements in the Brain.* By J. Hughlings Jackson, M.D., F.R.S., Churchill, 1875.

The author here reprints a paper (25 pp.), on the anatomical and physiological localisation of movements in the brain by study of paralysis and convulsion, which appeared in the *Lancet* in 1873; adding in an appendix two reports by Dr. Gowers, confirmatory of the views expressed in the paper, and in a somewhat elaborate preface (xlviii pp.), drawing out the general import of the series of investigations on the brain and nervous system which he has published from time to time in the last ten or eleven years. The reprint is extremely opportune both in itself and as giving occasion for this statement of the author's position in relation to the more recent experimental labours of Hitzig and Ferrier. The author is remarkable for the careful heed he has given throughout his inquiries to the latest results of psychological science, while he has at the same time a singularly clear apprehension of the limits of his function as a clinical and physiological observer. No recent piece of work from the physiological side is more worthy of the attention of psychologists than this reprint with its weighty preface.

The fundamental position maintained by the author—a position which he has held from the beginning, but which, as far as regards expression, has become more clearly defined in the course, of his researches—is that the physical substrata of mental states are sensori-

motor processes, or, in other words, that the organ of mind is made up of processes representing impressions *and* movements. This amounts to saying that the higher and highest parts of the nervous system, known to be involved in conscious mental action (intellection, feeling, volition), are built on the same ground-plan as the lower parts with their function of simpler reflex action; and the author puts forward the view as the only one consistent with the doctrine of organic evolution. He prefers, for his own part, to call these sensori-motor processes the "anatomical substrata" of mind, but is careful to add that he thereby implies nothing as to the metaphysical relation of mind to the nervous system, the expression being reconcilable with very different opinions (some of which he cites) on that head. What he does seek most positively to convey is that in the brain there can never be question of aught but processes representative of impressions received primarily at the peripheral endings of afferent nerves, or representative of movements operated ultimately by efferent nerves through muscles; and that, in fact, the representation is always one conjoining both impressions and motor-impulses. Such being the fact, neither more or less, on the physical side at every stage of brain-development up to the highest in the convolutions, he strongly condemns the language of those physiologists who "speak as if at some place in the higher parts of the nervous system we abruptly cease to have to do with impressions and movements, and begin all at once to have to do with mental states." He contends, in short, for thorough-going parallelism between sensori-motor brain-processes and conscious mental states, in the sense at once of correspondence and absolute distinctness, and no one has ever expressed the general relation more clearly and forcibly. The question of the downward limit of this relation between the physical and the psychical, he touches but leaves open.

From this position, then, he defends his special assumption that the study of paralysis and convulsion, leading to the localisation of movements and impressions in the brain, has a most important bearing on the physiological investigation of the substrata of mind. Before Hitzig and Ferrier began to practise direct stimulation of the exposed surface of the brain in animals, Dr. Hughlings Jackson had been led, by clinical observation of human patients, followed up by autopsy, to general views regarding the structural and functional relations of the different parts of the brain which their experiments but served to confirm. To their labours he does ample justice—indeed he speaks of them with the most generous enthusiasm—but he rightly urges that his own method of research must continue to be followed for the human brain. His main conclusions may be shortly given—(1) In disease of the brain (whether by destruction or over-discharge of parts—paralysis or convulsion), the most voluntary or special movements, faculties, &c., suffer first and most; this he calls a principle of Dissolution, reversing the order of Evolution. (2) The convolutions near the corpus striatum re-represent the movements represented in that centre. (3) The same muscles are represented in different order in several places; although, therefore,

muscles may be convulsed by discharge from a particular part of the brain, they need not be paralysed by its destruction. (4) The movements of the two sides of the body are represented in each half of the brain. (5) The two halves of the brain are not duplicates: there is a leading side—the left in most people—for voluntary movements, the right side serving for corresponding automatic movements. (6) The anterior is the chiefly motor, and the posterior the chiefly sensory, region of the cerebrum; their distance apart and multiplicity of connections having a meaning in relation to the power we have of forming new combinations out of the elements of mental experience. (7) All the movements of the body, while represented in the cerebrum, are represented also, but in a different order in the cerebellum. The reader is referred to the reprint and the preface for the evidence upon which these conclusions are founded. Before closing this short notice, I wish, however, to draw attention more particularly to the discussion extending from p. xx. to p. xxxvii., where the author in proof of his main thesis that sensori-*motor* processes are the physical substrata of mental states, takes words and visual forms as examples, and shows that, whether the mental experience is representative or presentative, the brain-process is equally sensori-motor, involving both seats for receiving impressions and centres whence motor impulse proceeds. The whole argument is excellently conducted, and displays rare psychological acuteness. Should it be said that the instances are not quite decisive of the general position, being cases in which the presentative experience—actual speaking and seeing—too manifestly involves direct muscular activity, the author might reply that it was important to choose examples about which there could be no mistake; but, in fact, the case of vision is one which it needs no small amount of psychological training to apprehend rightly. Physiological observers, even when they duly appreciate the import of the motor element in speech, often fail to understand its import in the explanation of objective knowledge generally. It would not be easy to urge the latter point more effectively than it is done here by Dr. Hughlings Jackson.*

EDITOR.

* Since the notice above was written I have seen a series of three papers on Psychology and the Nervous System contributed to the *British Medical Journal* in September and October last. The writer, who is evidently Dr. H. Jackson himself, while expounding the main positions of the pamphlet here noticed, supports them with new and important evidence. One paragraph bearing on the question last touched of the part played by muscularity in vision, contains an argument so neatly put and so decisive that it deserves to be quoted in full:—

"There are many morbid conditions which show the importance of muscularity, or of action of nervous centres representing movements, in the estimation of the extension of objects. By altering movements of our eyes, we alter the size of objects, if this expression may be permitted. For example, if we impress the retina with a flame, and thus obtain an after-image, we find that this varies greatly in size as we look near or into the distance. Yet the sensory element concerned—the retinal area affected—is unaltered during the differences of ocular adjustment. There is even more than

The Principles of Sociology. By HERBERT SPENCER. Parts I to V. Williams and Norgate, 1874-5.

The issue of this work has now advanced to five parts, amounting to 400 pages, embracing a number of topics of the highest interest.

The Philosophy of History has passed through several phases since History first began to be written, as may now be clearly seen from Professor Flint's work, of which the first volume, comprising French and German authors, has been published. The subject received its last great impulse from Auguste Comte's work—the *Philosophie Positive*, following on John Stuart Mill's articles in the *Westminster* and *Edinburyh Reviews*—on Guizot, Michelet, Thierry, and De Tocqueville. In the *Logic*, Mill, having imbued himself with Comte's speculations, presented a summary of theoretical Sociology, which served as a sort of text-book or compendium to a generation of learners.

Mr. Spencer's work starts from a new vantage ground. The speculative doctrine of Evolution was implicitly allowed in regard to social facts, when not thought of anywhere else; and as it is now formulated with precision, it is in a better state for being applied anew to human history. Again, the accumulation of observations respecting the earlier stages of man, and respecting the inferior races, has provided an immensely enlarged inductive basis for the laws of social evolution. On this basis various theorists have already established a number of remarkably luminous inductions.

Mr. Spencer's competence for rearing an advanced scheme of Sociology rests upon his having worked his way upwards through the various preparatory stages, in a series of treatises, each admirable in itself, and all pointing to this consummation. The science that Sociology immediately reposes upon is Psychology; and in his systematic handling of this branch, Mr. Spencer, while doing justice to the wide field of mental facts, has made his expositions point, by anticipation, to Sociology. We are, therefore, interested in glancing at his manner of entering on the new department.

He opens by a short chapter defining "Super-Organic Evolution" as that new and higher form of Evolution exhibited by man in

this. By different adjustments of our eyes—that is by altering the *motor* element—we may to some extent alter not only the size, but the shape, of these spectral images. Thus, if we impress the retina by a circle, and then project the after-image on to an inclined sheet of paper, our spectral circle becomes oval; a spectral square becomes oblong. This is a very remarkable illustration, showing the importance of movement in the estimation of shape. In both cases, the retinal (sensory) element is unaltered. The differences in size and shape are owing to differences solely in the motor element."—*British Medical Journal*, Oct. 2nd, 1875.

The writer also draws attention to Dr. Weir Mitchell's remarkable work on *Injuries of the Nerves*, which furnishes evidence strongly confirmatory of the doctrine that the so-called muscular sense accompanies the *out-going* of motor-impulse by the efferent tracks—a doctrine associated in this country with the name of Professor Bain, and in Germany chiefly with the name of Professor Wundt.

society. He already prepares us for his line of treatment, which is to make Evolution the mould or matrix of all Sociological doctrines, much the same as he has done with Psychology.

He then inquires what are the "*factors* of social phenomena." First are the extrinsic or *external* factors, namely, the physical environment—comprising climate, configuration of surface, vegetation, animal life, and the modifications that man can make upon these. The physical circumstances and surroundings of human societies have long been taken account of in explaining their state of progress. ~~It was~~ brought into prominence by Montesquieu, and ~~is~~ now adverted to by all historians and sociologists. Mr. Spencer's handling of the subject is brief, but takes in all the leading points. He lucidly brings out the important bearings of climate, variety of surface, vegetable productions, and animals; resuming skilfully the various ways that the past and the existing civilisations have been influenced by one and all of these different conditions.

After the external factors come the *internal*—Man himself. This leads to a review of the characteristics—physical, emotional, and intellectual—of what many call the primitive type of man; a somewhat arbitrary assumption, but yet necessary as a starting-point, and not involving any hypothesis as to the actual commencement of the human race.

Under the physical traits, Mr. Spencer first discusses the *stature*, and finds that, although there are curious exceptions, as a rule, the lowest races are inferior to the civilised races in this characteristic; yet not in a very decided degree, except in the lowest races of all. A more marked difference is in the development of the *lower limbs;* short, small, slender, or crooked legs would seem a prevailing feature of the savage tribes. The meaning of it is discussed with great appearance of reason. Then comes the trait of *large digestive organs*, the 'pot-belly'; obviously connected with uncertain meals and coarse food; and implying a low capacity for steady work. Farther, the *muscular strength* as a whole is not up to the mark of the civilised man. Again, the primitive man has a point of advantage or superiority in his *hardiness*, the power of resisting cold, malaria, and bodily injuries. Mr. Spencer thinks it probable (he might have said "certain") that this, and we may add the pot-belly, entails loss of power in other directions. It is a positive endowment of the system, an expenditure of nervous and other power, to maintain leading functions at great odds. Allied to the same fact, Mr. Spencer thinks is the *callousness to suffering* generally; indeed this is the same fact, if it means that causes of suffering do not make suffering. The concluding physical characteristic is *early arrival at maturity*, connected with a low cerebral type.

The mental characters are divided into emotional and intellectual. As to the *emotions*, the first and fundamental trait is *impulsiveness* to which is properly devoted a considerable amount of illustration, being the key to many seemingly contradictory manifestations of the savage mind. Improvidence is merely one direction of the

same trait; and with this is associated by cause and effect a childish mirthfulness. Next comes the important circumstance of *sociability*, or rather the balance of the two opposing tendencies, one tending to independence, the other to social cohesion. Here the primitive man shows considerable variety, but until the social forces acquire preponderance he makes very little way. Sociability is first strongly manifested as a cohesive force in the form of *vanity*, and the influence of approbation and disapprobation generally, the first great curb to egotism pure and simple. As regards *sympathy* proper, the sources of its culture are the marital and parental relations, whose manifestations in the lower tribes are set forth by the author at some length. To these characters is added the *fixity of habit* in the uncivilised man, a consequence and a cause of his degraded condition.

Viewed *intellectually*, the primitive man is wanting in the grasp of *general facts*; out of which single defect springs a multiplication of weaknesses. Next is a point of superiority, if viewed in itself, namely *acute nerves* and quick perceptions. To exceed another person in delicacy of smell or hearing is a merit and not a defect. The misfortune is that such acuteness should be necessary, being purchased at the expense of the more exclusively intellectual functions, such as are necessary for arriving at general truths. The superhuman smell of the savage has to disappear along with the pot-belly, before he can be a well proportioned intelligence. Acuteness of sense may lead to artistic excellence, as in the low form of mimicry, for which savages have often a talent. The general intellectual weakness is further associated with extreme *credulity*, and with an absence of rational surprise and intelligent curiosity: the motives necessary to the beginning of what may be called speculative knowledge. Another important remark is "the lack of *constructive* imagination," a guarded phrase which allows plenty of another kind of imagination —the converting of facts into fancies. And finally comes the intellectual side of one of the physical traits, namely, that the primitive intellect *develops more rapidly* and stops sooner than the intellect of the civilised man.

Mr. Spencer's next chapter is "Primitive Ideas," an exceedingly valuable and interesting review of the way that the intellectual defects of the early mind limit and pervert its views of the world. Here he anticipates the difficulty of knowing what *are* the primitive man's ideas. If we take very low races at the present time, we may find that they have ideas beyond their station, in consequence of being the degenerate successors of some better race: retrogression being a fact as well established as progression. Nevertheless, starting from the weakness of faculty of the infant races, we see that they are bad classifiers, confounding, for instance, glass with ice, and biscuit with dried flesh. Still more are they out in classing relations (cause and effect) as when they call dew the same effect as "sweat," or "spittle." In short, they have no power of analysis, adequate to deal with the unions of like and unlike properties presented by the outer world. Their notions of what makes an

"explanation" are singularly hazy. They swallow incongruities and inconsistencies by the score.

In following out these tendencies to results of importance, Mr. Spencer instances the attitude of the savage mind in gazing at a cloud that has vanished, or at the occasional disappearance of the stars, the moon and the sun. Unable to reach the true interpretation, he snatches at the most familiar analogy, and says they have *departed*—walked away. What does he make of the wind? A power that cannot be seen; but this invisibility is simply due to going away. From facts such as these he takes up the notion of *duality*, or double existence—in sight and out of sight.

Another class of things—a fossil, for example,—gives the idea of the transformability of matter; and, there being no definite limit to the process, when trees are seen petrified, it is quite admissible that men may be turned into stones. Then what ideas are formed from living growth: from a chick leaving the egg? It is just as conceivable that the chick may be brought out of a nut.

What is a shadow? A reality, attached to a tangible object, but itself intangible—a real existence. What are reflexions? Another intangible accompaniment of things. What are echoes? The voices of concealed beings; confirming the duality of existence—the seen and the unseen.

Now for a theory of this double existence. To prepare the way, the author devotes a chapter to the distinction between the Animate and the Inanimate, as evolved in the primitive intelligence. At this point, I shall stop for the present. In another notice, it may be possible to indicate an outline of the genesis of the conception of "Spirit" or mind, which is fraught with so many developments, including Religion and the Supernatural.

A. Bain.

The Character and Logical Method of Political Economy. By J. E. Cairnes, LL.D., Emeritus Professor of Political Economy in University College, London. Second and enlarged edition. Macmillan and Co., 1875.

The late Professor Cairnes spent the last remnant of his strength in revising the lectures on the Logic of Political Economy, by which he laid the foundation of his fame. They were originally delivered by him as Whately Professor of Political Economy at Dublin in 1857, and announced the rise of a new and vigorous thinker. By what labours he passed to the rank of a master, not only in economics, but in political science generally, is well-known, and now since his death in June the world has learnt what only his friends knew before, that all the work of his later years—the years of his intellectual prime—was done under overwhelming physical helplessness and in the face of inexorable doom. It was a revelation of the possibilities of human nature to see him as he struggled on.

Besides a number of minor changes, the present edition of his early work includes a new chapter on the subject of Definition in

political economy. That definitions in such a science as political economy are expressions of results rather than principles to be reasoned from; that they are thus only provisional and subject to constant revision; that they may be good, though the attributes involved are found to exhibit degrees in the concrete; that, in a subject so nearly allied to the interests of life, the terms employed must be borrowed from popular speech, and should be used as nearly in their common meaning as consists with the exigencies of the science—such are his main conclusions, and they bear the stamp of the sagacity so distinctive of his mind. The exposition of the logical method to be followed in the science generally—conceived in the sense of Mill's doctrine of deduction as resorted to in matter too complex for direct observation and not amenable to decisive experiment, while at the same time the general character of the causes or conditions involved is not doubtful—remains the best that has yet been attempted. In his new preface the author declines to follow Professor Jevons in his endeavour to make the deduction strictly quantitative, "unless it can be shown either that mental feelings admit of being expressed in precise quantitative forms or that economic phenomena do not depend upon mental feelings." It is interesting, on the other hand, at the present time when the statistical treatment of economic questions has come so much into vogue, to note how forcibly Cairnes argued beforehand against its scientific character. Not for a moment denying the importance and necessity of statistical inquiries, whether for determining the real economic problems that have to be solved, or as furnishing the indispensable means of verifying the reasoned conclusions, he yet maintains that in the divinatory selection of appropriate premisses and in the conduct of the reasoning process lies the true function of the scientific economist. EDITOR.

X.—REPORTS.

I. PHYSIOLOGICAL JOURNALS, &c.*

Rate of Current in Sensory Nerves.—Bloch has recently made a very elaborate experimental inquiry into the rapidity of the nerve current in sensory nerves, and has arrived at conclusions differing from those of other physiologists.

(1) The rapidity of the nerve current in sensory nerves should be determined exclusively by sensations, without involving any other physiological phenomena.

(2) Bloch's method is founded upon observations of the greater or less persistence of the sensation between two successive shocks. If two shocks are received simultaneously or successively, one by

* Any monographs or journals containing information as to researches into physiological questions bearing on psychology may be sent to the Editor for future notice under this heading.

each hand, then in the latter case, if the interval between the two shocks be sufficiently short ($\frac{1}{45}$ of a second being the limit) the mind perceives only one sensation.

(3) The explanation of this is that the sensation produced by the first shock lasts with a sufficient degree of intensity until the arrival of the second impression and the commencement of the second sensation. By graduating the distance between the points of shock and graduating the time between successive shocks the sensations may still be synchronous, although the points of shock are widely apart. If we keep the same time between shocks at different points of shock, the interval between the sensations or the absence of synchronism will indicate the time occupied by the sensory transmission.

(4) If the first shock be transmitted, say to the lobule of the nose (nearer the sensorium), and the second to the hand, the synchronism between the two shocks becomes evident on permitting a longer time to elapse between the two shocks than when the shocks are sent to both hands. The time of receiving the shock and of the sensation is registered upon a rapidly revolving wheel. The difference between the two intervals measures the difference of the duration of the transmissions from the hand and from the nose respectively to the sensorium.

(5) Bloch found by observation and subsequent calculation that rapidity of transmission is greater in the spinal cord than in the nerves.

(6) Experiments made by stimulating the nose, the hand, and the foot have given the following results: Rapidity of the nerve current in the Spinal Cord is 194 metres per second; in the Nerves, 132 metres per second.

The methods previously adopted by physiologists for the measurement of the rapidity of the current of sensory nerves by means of such an apparatus as Regnault's chronograph have given a lower rate than that computed by Bloch. They are—94 metres per second (Kohlrausch), 60 (Helmholtz), 34 (Hirsch), 30 (Schelske), 26 (de Jaager), and 41.3 (Von Wittich). Bloch also states in his paper, (1) that a voluntary movement excited by a sensation and executed by a contraction of the muscles of the forearm and hand is more rapid when one of the two hands is excited than when any other part of the body receives the impression; (2) that flexion of the finger in response to a shock transmitted to the forearm or to the face is produced more slowly than when the shock is transmitted to the hand; and (3) that the general position of the body influences the results and modifies the time required for the transmission of sensory impressions. (*Gazette Médicale de Paris*, Juin, 1875; *Archives de Physiologie*, Brown-Séquard, Charcot, Vulpian, Août et Sept. 1875.)

Sleep.—Obersteiner states that sleep is due to the accumulation of acid products in the brain. It is well known that activity in muscles or nerves is accompanied by the formation of acid substances; but Obersteiner has not proved (1) that the grey matter

of the brain during action becomes more acid than it is normally; nor (2) that the presence of acid in the grey matter would so interfere with its activity as to produce sleep. This theory of sleep is, therefore, not based on a sufficient number of facts. (*Archiv. f. Psychiatrie*, Bd. 29.) Gscheidlen has shown that the grey matter of the brain and cord and of ganglia is always normally acid, whereas the white or conducting matter is neutral. (Pflüger's *Archiv*, VIII. 172.)

Pflüger has recently advanced a remarkable physico-chemical hypothesis regarding sleep, which may be shortly summarised as follows. The functional activity of a nerve-centre, as of any other organ, depends upon the dissociation of living matter, so as to form simpler compounds. This living matter consists of a modified kind of albumen, which is split up into numerous compounds, including carbonic acid. By this process energy is liberated or transformed into heat. An atom of carbonic acid is thrown into a state of very active vibrations, and these vibrations, or explosions, as termed by Pflüger, are transmitted in various directions along the nerves. Deprive a frog of oxygen and it passes into a state precisely resembling sleep or apparent death; admit oxygen and it is again aroused. From this Pflüger infers that a certain proportion of "intra-molecular" oxygen in the nerve-centres is essential to the waking state, since it secures a certain number of explosions, caused by its union with carbon, to occur in a certain unit of time at a given temperature. But during waking the process goes on too rapidly, and "the energy of chemical affinity is used up much faster than the intra-molecular oxygen of the grey matter of the brain can be replaced." Consequently less and less carbonic acid is formed; fewer explosions occur; and when these sink below a certain number per unit of time sleep occurs. The energy of the brain then sinks so low that it becomes incapable of maintaining action without an adequate stimulus, but even during sleep the brain energy is never entirely lost. Pflüger applies this ingenious hypothesis to explain the periodicity of sleep, and he compares ordinary sleep with the hibernating condition of mammals during winter and the summer sleep of tropical amphibia. (Pflüger's *Archiv*, x, 8, 9.)

Hereditary Transmission of Injuries to the Nervous System.—In the *Lancet* of January 2nd, 1875, Brown-Séquard illustrates the following examples of hereditary transmission: 1. Development of epilepsy in animals born of parents which had been made epileptic by section of part of the spinal cord, or of the sciatic nerve. 2. Change in the form of the ear of animals born of parents which had presented a like change after section of the great cervical sympathetic. 3. Partial closure of the pupil in the descendants of animals in which the pupils had become contracted after section of the cervical sympathetic or removal of the superior cervical ganglion. 4. Protrusion of the eyeball in the young of animals in which the eye had become prominent from lesion of the restiform bodies. 5. Conges-

tion and gangrene of the ears of animals the parents of which had the same lesion following irritation of the restiform bodies near the point of the calamus scriptorius. 6. Absence of the claw from certain of the toes of the posterior extremity in animals the parents of which had the posterior extremity rendered insensible by section of the sciatic or crural nerves.

These experiments are of great importance as bearing on the question of hereditary transmission of peculiarities acquired even in one generation.

The Accommodation of the Ear for musical tones of different pitch.—Lucae, by otoscopic observations and experiments, has come to the conclusion that the ear possesses two muscular arrangements for accommodation purposes. The ear, he states, is arranged for the reception of low tones by the action of the tensor tympani muscle, and for high tones by the stapedius. The range of action of the tensor tympani rises as high as C^b=9192 vibrations per second. Above that it exercises no influence; but the higher tones are heard with greatest distinctness when the stapedius muscle is in action. When this muscle is relaxed the higher tones are weakened or completely extinguished. These statements are founded chiefly on an ingenious experiment made first by Fick, and since frequently repeated by Lucae. The movements of the membrane of the drum cannot usually be seen by the naked eye in the uninjured living head. To render the movement apparent the teeth are placed gently together, and a glass tube having in the stem an index of coloured fluid (like that of a maximum or minimum thermometer) is placed in the external auditory meatus, having one end in contact with the membrane of the drum, and air tight. On contracting the muscles of the jaws the index moves toward the ear, in consequence of the rarefaction caused by the inward movement of the drum, produced by the simultaneous contraction of the tensor tympani with the muscles of the jaws. When this occurs deep tones are heard more distinctly than usual. To obtain simultaneous contraction of the stapedius, Lucae caused contractions of the muscle around the orbit (orbicularis palpebrarum) which is supplied by the same nerve as the stapedius. When the stapedius was in action, then high tones are heard more distinctly. Lucae also found, on examining in this manner many individuals, that there were some whose ears appeared to be better adapted for hearing high tones than low tones, and *vice versâ*. He divides all into "deep-hearing" and "high-hearing," and he states that abnormal deep hearing is more distinct in cases of facial paralysis (paralysis of the *portio dura*—facial nerve), while abnormal high hearing usually occurs where injury and possible loss of substance of the membrane of the drum has been caused by suppuration in the tympanum. In both of these cases the power of accommodation appears to be lost. (*Centralblatt*, October, 1875.) JOHN G. MC.KENDRICK.

II. German Philosophical Journals.*

Zeitschrift für Philosophie und philosophische Kritik, herausgegeben von Dr. J. H. v. Fichte, Dr. Hermann Ulrici, und Dr. J. U. Wirth, Neue Folge. Bd. 66. u. Bd. 67. Hf. 1. Halle, 1875.

The readers of Mind will have regularly presented to them an account of the contents of the philosophical journals of Germany. As a kind of preface to future notices, it seems desirable to indicate briefly the general characteristics of the periodicals which are to be reviewed. In the present number this is nearly all that can be attempted.

The *Zeitschrift für Philosophie* is undoubtedly entitled to the place of honour. Founded by Dr. Fichte in 1837, it is the oldest of the periodicals specially devoted to philosophical discussion which are still in circulation; it has been the medium of publication for numerous profound treatises of permanent value which would probably never otherwise have seen the light; and it has as yet lost none of its vigour. Its articles were never more elaborate, and its notices of books were never more carefully executed than at present. For many years it was the only German journal dedicated to mental science and speculative philosophy. It was published from 1837 to 1842 at Bonn, and from 1842 until 1847 at Tübingen, under the designation of *Zeitschrift für Philosophie und speculative Theologie.* In 1847 Dr. Ulrici, widely known to English readers as a literary critic, joined Fichte in its editorship, and since that date it has appeared at Halle. In 1852 Dr. Wirth, author of a *System der speculativen Ethik*, became the editorial colleague of Drs. Fichte and Ulrici, on his abandoning the management of a periodical founded by himself the previous year under the title of *Philosophische Studien.* Fichte, Ulrici, and Wirth have sometimes been described as pseudo-Hegelians, but certainly without good reason. They have always recognised the greatness of Hegel, and have sought to profit by the truth which he collected, and the truth which he discovered, but during the whole time of their editorship of the *Zeitschrift für Philosophie*, they have been among the most decided and influential opponents of what is distinctive of Hegelianism both in matter and form, although with praiseworthy liberality they have frequently received contributions from Hegelians of the right, as from other thinkers whose views were very different from their own. So long as Hegelianism was a living power, opposition to Hegelianism was a prominent characteristic of their journal. During later years that has naturally given place in a considerable measure to opposition to materialism, and to the various recent forms of evolutionism professedly based on the results of positive science. The chief aim, however, of the editors has never been a merely polemical one; on the contrary, it has been to do justice to all the philosophical systems of the past, and especially those which have issued from the critical investigations of Kant, to mediate between speculation and

* Reports on other journals—French, Italian, American—are postponed from want of space.—Ed.

empiricism, to harmonise metaphysical philosophy and positive science, and to elaborate and establish a comprehensive Theistic theory of the universe.

The articles in the *Zt. f. Ph.* are frequently sections of treatises which are continued from number to number for a year or longer, and it is not always possible to judge aright of the parts until the whole has appeared. Occasionally, therefore, the reviewer may find it desirable to delay giving a particular account of the treatises in this periodical until they are completely before him; but this will only happen when their themes and mode of treatment seem to him to give them a special interest for the readers of a journal of scientific psychology and philosophy. There are no less than three series of articles brought to a close in the numbers before us. In the first number of vol. 66, Dr. Grapengiesser has the last of three articles on "Kant's Transcendental Deduction, with reference to the writings of J. Bona Meyer, O. Liebmann, Kuno Fischer, Ed. Zeller, Herm. Cohen, and Ed. Montgomery." They are full of acute criticisms expressed with great clearness and vivacity. He finds Kant lamentably misinterpreted by his commentators and accusers, and aims throughout at showing that no one has understood him so well as Fries, who ought to be considered as his true successor. In the following number of the same volume Dr. J. Wolf concludes a series of four articles on "the Platonic Dialectic." And in the first number of the following volume Dr. A. Dorner has the last of his three articles on "the Principles of the Kantian Ethics." In 66. 2. Prof. Teichmüller communicates a hitherto unpublished letter of Kant and another of Fichte. That of Fichte is very characteristic and interesting. In 67. 1. there is an essay of Dr. J. H. Loewe on "The Simultaneous Origination of Speech and Thought." More than the half of each number of the *Zt. f. Ph.* is occupied with reviews of books on philosophical subjects; and great care is evidently bestowed on this department. English works are generally noticed by Prof. Ulrici, and Italian works by Prof. v. Reichlin-Meldegg. A considerable number of books in various languages are faithfully summarised and intelligently criticised in the numbers before us. Ulrici's review of Sigwart's *Logik* (Bd. 66. H. 1.) is valuable as a clear and reasoned statement of the chief points of agreement and difference between these two eminent logicians. Prof. E. Pfleiderer has written (Bd. 66. H. 2.) a most thoughtful disquisition on "Realism and Idealism," suggested by Baumann's *Philosophie als Orientirung über die Welt*. It seems almost invidious, however, to refer specially to those two reviews, when there are so many others equally, or almost as, elaborate.

R. Flint.

Zeitschrift für Völkerpsychologie und Sprachwissenschaft. Herausgegeben von Prof. Dr. M. Lazarus und Prof. Dr. H. Steinthal. Achter Band. Drittes Heft. Berlin, 1875.

This periodical was founded in 1859. Only two numbers are published each year, and four numbers make a volume. Its editors

are both men of the highest reputation as comparative psychologists and scientific philologists. Dr. Steinthal's treatises are in the hands of all who take an interest in the philosophical study of language, and Dr. Lazarus is the author of a remarkable work entitled, *Das Leben der Seele, in Monographien über seine Erscheinungen und Gesetze*, which is eminently worthy of being better known in this country than it is. The branch of psychology to the advancement of which their journal is devoted is meant to treat of the collective life of humanity as it presents itself in tribes and nations, with whatever in history is seed or fruit, condition or consequence of the general mental life. The science of speech which it is designed to cultivate is not ordinary philology or empirical linguistics, but a science which seeks to discover, in the way of exact research, the psychological laws according to which human language is realised and developed. Lazarus and Steinthal belong to the school of Herbart, and the psychological principles of Herbart often come into view in the pages of the *Zt. f. V. u. S.* They are seldom, however, brought very prominently forward, and language is much more frequently employed to throw light on psychology than psychology to throw light on language. Those who are aware how abstruse, complicated, and difficult to follow in its details and applications the Herbartist theory of mind as a "psychological mechanism" is, will rightly infer that readers, and even reviewers, have reason to be grateful that the light is thus made to shine on the darkness instead of the darkness being brought down upon the light. And, which is more important than the ease of readers, the procedure is one which is correct in itself, and which cannot but be profitable to psychological science. It is only by solving problems which are in great part presented to it from without that any science can be truly advanced. Even mathematics, which has in the character of its fundamental conceptions such an enormous advantage over all other sciences, has found its chief stimulus in the requirements of the natural philosopher, in the problems of astronomy, mechanics, optics, heat, and electricity. And if this is so with the science which is based on such singularly simple, precise, definable, workable conceptions as number and quantity, surely nothing but delusion and emptiness can be expected from a science like psychology, with its vastly vaguer conceptions and vastly subtler objects to start from, attempting to proceed entirely from within and ignoring the combinations of human nature which are presented in history, in literature, and in language. A main reason why the mental world has been so imperfectly explored has doubtless been the abstract, speculative, self-contained nature of our mental science; its neglect of the concrete and spontaneous manifestations of the human mind and life. Among these manifestations none is so likely to prove rich in psychological instruction as language, which is at once far the truest mirror of the present character of man, and far the oldest record of his past history. Philological analysis is often psychological analysis of the subtlest and most delicate kind, the shades of meaning which a term may acquire from the circumstances, time,

and mode in which it is used being indefinitely numerous, so that to distinguish them with precision calls for a nicety of discrimination which nothing else would occasion, while it often brings out unexpected and valuable results. We would not wish, then, that the *Zt. f. V. u. S.* should become less a medium for contributions to the science of language and to comparative human psychology than it at present is; but, perhaps, it is to be desired, now that the *Zeitschrift für exacte Philosophie* has unfortunately ceased to appear, and that the Herbartist school has, in consequence, no longer a general organ, that its scope and plan were enlarged, its staff of writers increased, and that it were published more frequently.

The greater part of the number before us is written by Prof. Steinthal. He first gives us, as a contribution to the Philosophy of Religion, a very trenchant review of J. Bona Meyer's *Philosophische Zeitfragen;* then an article on "Semitism," indicating what light Schrader's recent researches have thrown on the genius of the Semitic race; and, finally, three notices of books and a note on the "Infinitive." G. v. d. Gabelentz concludes his papers on "Comparative Syntax." There is unusually little in this number of what is psychological or philosophical. R. FLINT.

Die neue Zeit. Herausgegeben von Dr. HERMANN FREIHERRN VON LEONHARDI. Bd. iv., Hfte. 1 u. 2, Prag. 1875.

It is to be hoped that these will not be the last numbers of this interesting periodical. We learn, however, with deep regret, that the editor, Baron von Leonhardi, died at Prague on the 20th of August. The school of Krause has recently suffered heavily from the strokes of death and fate. It is little more than a year since it lost in Prof. Ahrens the most widely known of its German jurists. In Spain alone, three of its members, F. M. Maranges, Thomas Tapia, and Fernando de Castro, all distinguished scholars and friends of the noble Sanz del Rio, died during the previous year. About the end of February last other representatives of it, whose names are still more celebrated, Nicholas Salmeron, Giner de los Rios, &c., were, in that unhappy country, driven from their professorships, exiled and silenced. Now, there has come the death of the man whose breadth of culture, whole-hearted acceptance of his master's principles, inexhaustible zeal for their diffusion, and intense interest in every kind of educational progress and social reform, made him not only the universally acknowledged head of the Krausean school in Germany, but an almost ideally perfect representative and embodiment of Krausean doctrine. That doctrine claims to be not only a theory of existence, but a rule of life for the individual in all his relations, and for the family, the nation, and the race in all their stages. Hence, Dr. v. Leonhardi, in founding and directing congresses for the advancement of philosophy, in establishing local associations for its study, in attempting to popularise the teaching of it and to make it a general instrument of culture, in advocating the *Kindergarten* system and the higher education of women, in endeavouring to organise the profession of teachers and to give it wider

and higher aims, and in inculcating peace between nations, legal reforms, hopefulness as regards the future of humanity, &c., was only exemplifying the spirit and principles of Krauseanism, but he exemplified them with an admirable, an unequalled fulness and faithfulness.

The *Neue Zeit* would have been no true mirror of the mind of its founder, and no true organ of the philosophy of Krause, if its aim had not been at once theoretical and practical, the advancement of science, and the improvement of life. It has, however, been addressed alike to the students of philosophy and to those who are chiefly interested in the social, political, and religious agitations and problems of the age. Of course, present day questions have been always looked at in relation to fundamental and eternal truth, on the one hand, and to the laws and end of human development, on the other, as believed to have been ascertained and proved by Krause.

Of the two numbers which have appeared during the year, the first is almost entirely occupied with the philosophy of history. To begin with, there are eleven lectures delivered by Leonhardi at the University of Prague in 1866-7 on "The laws of human development and the problem of human life." They are expressly declared to be founded on Krause's philosophy of history, and we have seen no exposition so good of some of the chief peculiarities of this portion of Krause's system. Then, there is, also from Leonhardi's pen, an article on the accounts of Krause's philosophy of history given by M. Frédéric de Rougemont in his *Deux Cités* and by the undersigned in his *Philosophy of History in France and Germany* with which neither of us at least is likely to find much fault. Prof. Zeller will probably feel very differently regarding Dr. Hohlfeld of Dresden's criticism of the exposition of the Krausean system given in the *Geschichte der deutschen Philosophie seit Leibnitz*. However, Dr. Hohlfeld's objections are mostly well-founded, although they naturally appear more serious to a follower of Krause than they will to others. In the following number Dr. Hohlfeld has two articles. The first entitled "The Philosophy of Krause and the German Empire," begins with a defence and eulogy of Krause as a writer. Dr. Hohlfeld expresses high admiration even for the scientific terminology which Krause employed in his later synthetic writings. This admiration, we fear, must appear to all but a very few co-disciples an inexplicable eccentricity of literary taste. In the second portion of his essay he seeks to show the high significance and value of the philosophy of Krause by indicating its chief characteristics. These he considers to be the originality, depth, and clearness of the idea which it gives of the primary, supreme, and ultimate Being, its completeness and consistency as a doctrine of evolution, its universality or comprehensiveness as regards alike the objects and sources of knowledge, and its practical character, as manifested especially in its philosophy of history, its philosophy of law, and its philosophy of religion. His second article is on "The place of the Science of Language in the System of Science." In order to give an intelligible account of it we should require to explain generally Krause's

views on the relations of the sciences, and that, ingenious and suggestive although these views be, we must not attempt to do at present. The article of perhaps greatest general interest in the number—that of Prof. Röder "On the relation of Law and Government to Religion and the Church"—does not concern us here.

R. Flint.

Philosophische Monatshefte. Unter Mitwirkung von Dr. F. Ascherson und Dr. J. Bergmann redigirt und herausgegeben von Dr. E. Bratuscheck. Bd. xi. Hfte. 1-8. Leipzig, 1875.

This periodical had for predecessor the Hegelian journal *Der Gedanke*, which was edited from 1861 to 1867, by Dr. Michelet of Berlin, and during 1867, by Drs. Michelet and Bergmann. Their partnership ending with the close of that year, the *Gedanke* was discontinued and the *Philosophische Monatshefte* was founded by Dr. Bergmann, who acted as sole editor of the first seven volumes. Since 1872 it has been edited by Dr. Bratuscheck in conjunction with Drs. Ascherson and Bergmann. Its plan and character have been considerably modified in the course of its history. It will suffice to indicate what they are at present.

The aim which its editors set before them is that of making it a central organ for philosophy in Germany; a publication equally open to all particular schools, and in which none will receive any special favour. They freely allow criticism of the articles and replies to the reviews which appear in it, provided that the polemical do not degenerate into the personal. They seek to have an impartial objective account given of all investigations of importance in every department of philosophy. In order to accomplish this, some numbers of the *P. M.* have, during the present year, contained no original essays, and the notices of books have been in many instances merely careful summaries, without any critical annotations. In general, there is at least one essay in each number. Occasionally, but rarely, there are contributions which extend over several numbers. In each number a list is given by Dr. Ascherson, who is Custos of the University Library of Berlin, of all books, pamphlets, and periodicals which treat of general philosophy, the history of philosophy, logic and the theory of cognition, psychology, metaphysics, philosophy of nature, ethics and the history of culture, the religious question, æsthetics, and pædagogy. The completeness of these most useful lists, and the skill with which the works enumerated are grouped, are worthy of the editor of Ueberweg's *History of Philosophy* and of the *German Universities' Calendars*. Intelligence is also regularly supplied by this journal as to the courses of lectures on philosophy delivered in the Universities, the subjects discussed in philosophical societies, the themes prescribed by the Universities for philosophical prize-essays, changes in the philosophical professoriate, and, in fact, all matters likely to interest the student of philosophy. It is undoubtedly the journal best calculated to keep either the native or foreign reader 'posted up,' as the Americans say, on all that is being done in philosophy throughout

Germany. Ten numbers are published annually, and compose a volume.

The first essay in the volume before us is Dr. Bratuscheck's (in No. 2) on "Positivism in Science." It is an attempt to show that the positivism of Comte is essentially a reproduction of the phenomenalism which was taught by the Greek sophists and refuted by Socrates and Plato; that it is self-contradictory in its principles and arbitrary in its inferences; and that it naturally tends to nihilism in speculation, and slavery in practice. Prof. Dilthey of Breslau, the author of one of the best philosophical biographies in the German language, a *Life of Schleiermacher*, began in No. 3, a contribution on "The Study of the History of the Sciences of Man, of Society, and of the State," which is continued in Nos. 6 and 8, and is not yet concluded. In No. 4, Dr. Merx publishes the inaugural lecture which he delivered as professor of Semitic Philology at Tübingen in 1869, on "The Philosophy of Religion of Averroes." It may safely be recommended as an introduction to the study of the doctrine of the celebrated Arabian Aristotelian, and of the works which treat of it, as, for example, those of Renan, Munck, and Müller. Dr. Merx also publishes (in No. 7) the inaugural discourse delivered by him in February, 1875, as professor of Oriental Languages at Giessen, under the title of "The Law of Codification." The remarks which it contains on the combination of necessity and freedom in historical development, on the manner in which earlier cognitions and volitions influence and limit later ones, on Lazarus's law of the concretion of ideas, &c. and still more the attempt to show from Hebrew, Arabian, and Roman history how nations at the commencement of new epochs are impelled to save and sum up in Codex and Canon what the past has left to them or evolved for them of a rule of life, will not fail to interest the student of the philosophy of history. The essay of Dr. Vaihinger (in No. 5,) on "The present state of the Cosmological Problem," is so full of information that it would scarcely admit of further condensation. Of the longer reviews which have appeared in the numbers before us, we would mention those of Weber's *History of European Philosophy*, Zimmermann's *Kant and Positivism*, Poetter's *Personal God and the World*, Flint's *Philosophy of History in France and Germany*, Brentano's *Psychology*, Dühring's *Critical History of Philosophy*, Vitringa's *Man as an Animal and Spiritual Being*.

R. FLINT.

Athenæum. Monatsschrift für Anthropologie, Hygieine, Moralstatistik, Bevölkerungs- und Culturwissenschaft, Pädagogik, höhere Politik und die Lehre von den Krankheitsursachen. Herausgegeben und redigirt von Dr. EDWARD REICH. Erster Jahrgang. Hefte 1-3. Jena, 1875.

This periodical was started in April last. As its title shows, it is of a very mixed or miscellaneous character, and treats of various subjects which we are not required to notice here. Its aims are described in its prospectus as being at once scientific and practical—the knowledge of the whole man singly and collectively, and the

furtherance of the bodily and moral, the individual and general health and welfare. "On the foundation of physiology and statistics we would raise the lofty watch-tower from which we may descry the entire nature of man, the connection of our race with the world and with civilisation, and the sources of the sufferings which afflict individuals and communities; and the results ascertained we would apply to maintain the health and prosperity of individuals and of humanity, to avert maladies, and to remove their causes." Such is the idea which has originated the publication before us. Without ceasing to be scientific, its articles are intended to be of interest not merely to specialists but to educated persons of all classes.

The first number begins with an article by the editor on "The relation of Heredity to the National Mind." It is essentially a statement of the conclusions which Haeckel, Galton, Ribot, and a number of recent writers on mental pathology and the transmission of diseases have arrived at on the subject of which it treats. The second article, which is also continued in the following number, is on "The bearing of the Doctrine of Descent on Morals and Politics." It is by a very independent thinker, Dr. F. A. von Hartsen, who writes oftener in German and French than in his native Dutch. The first part of it is a plea for the preservation of the weak and deformed, and for the non-prohibition to them of marriage, and an attack on what he calls "the slaughter-house theory" of certain Darwinian moralists; the next is an endeavour to show that it is futile to explain by heredity either monarchy or aristocracy, and that the intellectual and moral qualities have necessarily far less chance of being transmitted than physical peculiarities; and its concluding section is a refutation of those who have sought in Darwinianism for a justification of the doctrine that might is right, and that a strong people may crush or exterminate a weak one if it find it convenient for itself so to act. In No. 2 Dr. Reich has an article on "Suicide," in which he indicates the reasons why the proportion of suicides to population differs within each religion, and why it varies with profession, degree of culture, age and sex. He shows that the causes of suicide are largely of a moral and removable nature, so that society has it in its power greatly to diminish the evil. The essay of Dr. Hartsen on "The Conciliation of Religion and Materialism," the first part of which is given in No. 3, the reviewer has already seen in *La Critique Philosophique* for 29th April, under the more appropriate title of "Materialism and Immortality." It is intended to prove that the principle of materialism, far from shaking the dogma of immortality, is its most solid support. Of books reviewed which have an interest to the student of psychology and philosophy we would mention Haeckel's *Anthropogenie*, Oettingen's *Moralstatistik*, Ribot's *Hérédité*, Hartsen's *Anfänge der Lebensweisheit*, Galton's *English Men of Science*, Kramar's *Problem der Materie*, and Hartmann's *Wahrheit und Irrthum im Darwinismus*. They are all noticed by Dr. Reich himself. German editors of philosophical journals are certainly not idle men. R. FLINT.

III. Psychology in Holland.

Since the publication of Professor van der Wijck's *Zielkunde* (psychology) in 1872, which was reviewed in the *Academy* for that year, no work of any importance bearing upon subjects of metaphysical and psychological investigation has appeared in Holland. The second part of the *Zielkunde*, which has for some time been expected, has not yet come to hand.

In the absence of anything more definite, it may be well to point out to English psychologists what we may reasonably expect from Holland. The Dutch writers of the present day attempt to hold a position between English and German philosophers, and endeavour to mediate between them. This was the position occupied by Opzoomer, and it has been taken up by most of his disciples, who try to mediate between German writers of the Ideal-Realist School like Hermann Lotze, and English psychologists like Prof. Bain and the late Mr. Mill. The study of Dutch psychology ought, therefore, to bring England and Germany nearer to each other, and enable psychologists in both countries to appreciate better than they do now each other's method, starting-point and general line of work.

In another and more definite line of work English Philosophy may take advantage of the labours of Dutch psychologists. The writings of Sir John Lubbock, Mr. Tylor, Mr. John McLennan, and others have familiarised us with the fact that the study of the beliefs and usages of savage tribes are of great value to the scientific student of psychology, law, and ethics. Now a great deal of the present philosophical activity of Holland belongs to the Leyden school of theologians, or, as they call themselves, the "*Modernen*." This school maintains (1) that a comparative study of religions, especially of the great types of religions, should precede the study of theology, and (2) that theology is in all respects founded on anthropology, and is one of the divisions of the philosophy of mind, like ethics or metaphysics. With the theological worth or worthlessness of these principles we have, of course, nothing to do, but it is manifest that their application ought to enrich psychology in two ways—by directing attention to the subject of the psychological beliefs of primitive man, and so to the historical method of studying psychology, and also by throwing light upon that somewhat neglected division of the sphere of mind whose outcome we have in what is called "natural religion." Unfortunately this last year has been a singularly barren one; for the "*Modernen*," instead of prosecuting their researches along the lines they themselves have laid down, have got entangled in the discussion of a very old, and, according to their mode of dealing with it, not a very productive problem, viz.: whether the core of religion is to be regarded as ethical or as intellectual. The psychological interest in the controversy is narrowed to a single point, whether moral intuition is for all practical purposes a special use of the ordinary cognitive faculties, or whether there is something more in it than that. The two best essays which the controversy has produced are those of Dr. Hooijkaas

Ter beschrijving van de Ethische richting, in the *Theol. Tijdschrift* for March, 1875, and Prof. F. W. van Bell, *De godsdienst als een levensrichting, die de geheele persoonlijkheid van den mensch aangaat*, in the November number of the same journal. Prof. Van Bell's paper is short, clear, and incisive; he argues from the basis of the ordinary empirical psychology. Dr. Hooijkaas is not so clear, but there seem to be deeper psychological glimpses vouchsafed to him than to his clever young opponent.

THOMAS M. LINDSAY.

XI.—NOTES.

Sense of Doubleness with Crossed Fingers.—The familiar psychological experiment known to every school-boy, and noted already by Aristotle in the *Metaphysica* (p. 1011, a 33), has often in late years been made the subject of explanation in physiological books, though with little success, as far as I have seen; the explanation consisting generally in a laboured re-statement of the difficulty. What seems to me the true explanation suggested itself once when I tried the experiment, determined carefully to mark the precise phenomenon. Crossing the second finger backwards over the forefinger of the left hand held vertically with thumb uppermost, so that the under-side of the second finger (usually in contact with the third finger) rested on the upper-side of the forefinger (side next to thumb) I placed a penholder between them, bringing it first into contact with the second finger only. Causing it then to touch the forefinger also, I was struck by perceiving this second contact coming in, as it were, higher up in space, though the forefinger was then lower down. So when the forefinger was first touched, the contact with the second finger was felt as coming in lower down, though the second finger stood then higher up. The spatial reference is still more distinct when the eyes are shut and the judgment is guided by the character of the touches alone; but the most decisive form of the experiment is with other people's fingers, their eyes being shut and the question being simply put: Does the second contact seem to you to come in higher up or lower down in space than the first? The report is always the same; and the interpretation is obvious. We perceive the contacts as double *because we refer them to two distinct parts of space.* The upper-side of the forefinger and the under-side of the second finger (sides understood as above) are to us distinct parts of space, because normally these two surfaces are not in contact with one another; and they cannot normally be touched simultaneously except by objects which are, or are held to be, two (supposing, that is, bare contact only). Contrariwise, the under-side of the forefinger and the upper-side of the second, being normally in contact with one another, mean to us one and the same space, so that when they are held apart by aught intervening, the suggestion is of a thing filling one and the same space, in other

words, a single thing. It is here implied that every part of the tactile surface has a definite spatial character of its own, and about this as a fact there can be no question, whatever difference of opinion there be as to whether such character is original or derivative.

EDITOR.

Mr. G. H. Lewes on the Postulates of Experience.—In treating of the ultimate foundations of Inductive Certainty (*Logic of Deduction*, p. 273), I laid it down as essential that we should postulate or beg the Uniformity of Nature; maintaining that we could give no reason for the future resembling the past, but must simply risk it. Observation can prove that what has been, *has been;* but it cannot prove that what has been *will be.* When we run the risk and find, after the thing has happened, that our anticipation is correct, we feel re-assured, and think less and less of the danger of being found wrong; but this hardening operation does not make a logical proof.

Against this view of the postulate of Uniformity, Mr. Lewes brings the view, that to say "Nature is uniform," is an *identical proposition;* there is no hazard in it at all (*Problems of Life and Mind*, ii. p. 99). Now, to oppose an identical proposition is to bring about a contradiction in terms. Yet, at first sight, there seems no such contradiction, in saying that Nature follows one course to-day and another to-morrow; does one thing in London and another in Pekin. I should call Nature inconsistent with herself, in that loose sense of consistency that we apply to human actions; but I do not see any self-contradiction in saying that, a million of years hence, the boiling point of water at the ordinary pressure of the air is to be raised to 250° Fahrenheit.

According to Mr. Lewes, the true expression of Nature's uniformity is: "the assertion of identity under identical conditions; whatever is, *is* and *will be*, so long as the conditions are *unchanged;* and *this* is not an assumption, but an identical proposition." But now as to the conditions, in what light does Mr. Lewes view *Time* and *Place?* Are these among the conditions, or are they not? If these are conditions, I fully grant the identity; because the assertion then is that what is happening *here* and *now*, *is* happening; and nothing else is happening. But is he prepared to set aside time and place as not being conditions, as not needing to be taken account of at all? If he does, he gets the advantage of being able to affirm the Uniformity of Nature in the full extent required as a basis of Induction; but I deny that he affirms an identical proposition. It seems to me that to pass the bounds of time and place, *is* a hazard; and this is the real point at issue. I can only repeat that, as it seems to me, there is no self-contradiction in supposing that, though the physical conditions of an effect remain as they are, the effect may not be constant through all the eternity of years and all the infinitude of space. For this reason, I call the Uniformity of Nature a postulate or an assumption, and refuse to call it an identical truth.

A. BAIN.

Logic and the Elements of Geometry.—The *Syllabus of Plane Geometry* (Macmillan and Co., 1875) newly issued, after much deliberation, by the Association for the Improvement of Geometrical Teaching, includes an introductory section which sets forth the logical interdependence of certain associated theorems. In particular, four typical forms of theorem are given as standing in various important relations to one another:—

If A is B, then C is D (1)
If C is not D, then A is not B (2)
If C is D, then A is B (3)
If A is not B, then C is not D (4)

(1) and (2) are said to be *contrapositive* each of the other; (3) is called the *converse*, and (4) the *obverse*, of (1). Now, says the *Syllabus*, while (2) may be always got from (1) by logical inference, it is not so with (3) or (4); each of those by itself requires a geometrical proof independent of the proof of the original theorem; but yet both do not require to be independently proved, because they are themselves in turn (logically) contrapositive one of the other. It will therefore "never be necessary to demonstrate geometrically more than two of the four theorems, care being taken that the two selected are not contrapositive each of the other."

This view of the relations of the four propositions is not new, even in England, being found in more than one recent work. The *Syllabus*, however, makes an important advance in nomenclature. Hitherto theorem (4) has been designated by the name of *opposite*, used in such glaring inconsistency with the tradition of logical science and with common understanding—opposites plainly being propositions that cannot both be true—that it is difficult to see how the confusion could ever have been tolerated. The word *obverse*, now beginning to be employed in formal logic for what used to be called the *equipollent* proposition—a logical form that has a relation to (4) analogous to that borne by the pure logical *converse* to (3)—was suggested to the Association as a substitute for the so-called *opposite*, and, being frankly accepted, will now, it is to be hoped, for ever displace that unfortunate misnomer.

So far well, but the logician's interest in the scheme does not end with this rectification. Is it open to the geometer to appropriate the words *converse* and *obverse*, and use them in a sense which, if it is not inconsistent with, is at least different from, their original logical application? The words so aptly express the propositions which the geometer has in view, being those which in his (relatively) material science correspond to the converse and obverse of pure formal logic, that he may very fairly appropriate them. At the same time the logician may still more fairly claim that his own original use of the words shall not be put out of view, seeing it is implied (as, from the fundamental character of logical science, it cannot but be implied) in the usage of the geometer. The pure logical converse of (1) is "In at least some case where C is D, A is

B," or "If C is D, A may be B," and this is implied by the geometer in saying that *his* converse, "If C is D, A is B" (amounting to the logician's *inadmissible* simple converse of an universal affirmative proposition) needs by itself a geometrical proof. So the pure logical obverse of (1) is "If A is B, C is not other than D," and this is implied by the geometer in saying that *his* obverse, "If A is not B, C is not D," also by itself needs to be proved geometrically. Nor, if the geometer should deny that he does imply logical forms of which he may be ignorant, is the denial of any avail when he accepts (2) under the name of *contrapositive*, and thus expressly accords a place within his science to a process (contraposition) which is not only purely formal, but is, in fact, logical conversion applied in a special manner. The question of real importance, then, is the practical one, how the reference to logical principles may most effectively be made. The mode of reference adopted in the *Syllabus* cannot be pronounced in all respects satisfactory.

The scheme of the four associated theorems, though it has a certain symmetry, is open to objection in that it mixes up logical and extra-logical relations. The relation of (3) to (1), or of (4) to (1), is extra-logical, while the relation of (2) to (1) is purely logical. Would it not be simpler and better to take account only of the "converse" and "obverse" in relation to (1), and say that either of these two, by itself, needs to be demonstrated geometrically after (1), but both need not, because logic, starting with either, will give the other? Of course logic will yield a contrapositive of (1), but why particularise this as (2), when it may be assumed along with still other strictly logical transformations? In the way here suggested, a beginner would, at all events, get a distincter notion of the difference between logic and geometry; and if the plan involved the necessity of somewhat more expressly stating what is the true nature of such a logical process as contraposition, so much the better. There is some confusion in the *Syllabus* on this head.

Thus theorem (2) may unquestionably be obtained from (1) by the strict logical process of contraposition, and would now be called by most logicians its contrapositive (though, by the way, it is a negative, not a positive, proposition); but (1), although in turn it follows logically from (2), cannot be won back by contraposition, any more than a universal affirmative when converted logically into a particular affirmative can be restored, by a second conversion, to its original universal form. The process called contraposition, in all cases where it is applicable, consists of two stages—obversion and conversion. For example, the simple categorical proposition, "All S is P," becomes, when obverted, "No S is not-P," and this last, being farther converted, becomes "No not-P is S," the contrapositive, as it is called, of the original proposition. Now, obviously, this contrapositive cannot be made to yield the original "All S is P" by further contraposition (obversion and conversion), for "No not-P is S," being obverted, becomes the affirmative "All not-P is not-S," and this, being converted, gives "Some not-S is not-P," quite a different proposition from the original one. To get "All S

is P" back again we must proceed, not by obversion and conversion, which together, *in this order and only in this order*, make contraposition, but by conversion first and then obversion—an order of procedure perfectly valid in logic, but unprovided with a special name. Applying this to the case in hand, as (1) cannot be called the contrapositive of (2), so neither can (3) and (4) be called contrapositives of one another: if (4) is the contrapositive of (3), (3) cannot be the contrapositive of (4).

Let it not be said that the point here insisted on is a trivial one —that it is a mere question of naming. If it is important for learners to distinguish between a geometrical process and one purely logical, as the placing of this "Logical Introduction" at the head of the *Syllabus* implies that it is, there can be no controversy as to the necessity of exactly determining the character of the logical process. To call (1) and (2), or (3) and (4), contrapositives of one another, tells the geometrical learner little more than that there is a process called contraposition, which, if applied, will often save him much trouble. As long as he works with simple typical instances of theorems like (1) and (2), it is easy for him to see that the logical equivalence, by whatever name it is called, must hold in both directions, if it is asserted in one; but, when he comes to deal with actual geometrical propositions, even not very complex ones, he will find it difficult to assign the correct contrapositive, unless he is told definitely by what fixed line of logical transformation it may always be reached. In default of special instruction, he will hardly be able to draw from the examples of contraposition signalised throughout the *Syllabus* a consistent notion of the process. At the best, these examples need a good deal of transformation, verbal, if not logical, before they could be seen by a young student to correspond with the typical theorems which are all he has to guide him. One example, on p. 16, illustrates the graver confusion, or rather the positive error of reckoning as contraposition the passage from (2) to (1). It is there said that Theorem 24, "Straight lines that are parallel to the same straight line are parallel to one another" is the contrapositive of Axiom 5 (p. 15)—"Two straight lines that intersect one another cannot both be parallel to the same straight line." In truth the theorem follows almost directly from the axiom, which is a universal negative proposition, by the process of simple (logical) conversion: there is farther necessary a change in the expression amounting to (formal) obversion, but the first was the really critical step. Here, then, it is not logical contraposition, but logical conversion, which it concerns the geometrical student to understand, not to say again that contraposition always involves formal conversion. In short, it is impossible to frame any notion of the process of contraposition which shall apply, as is required in the *Syllabus*, equally to affirmative and negative propositions, unless it is taken to mean simply the establishment of logical equivalence; and even then it would still be necessary, before making any use of the process, to determine in what different ways equivalence may be secured. We are thus

inevitably brought back to the assumption of more than one process, however called.

The conclusion, then, to which I venture to come is that, unless logical principles are set forth more explicitly than in the *Syllabus* and other recent geometrical books, the reference to them is little likely to be of practical service to beginners. One thing is certain that, if logical principles were familiar to the geometrical beginner, he would both learn geometry better and at the same time, in the process, singularly strengthen his grasp of logical principles. The notion will be scouted that a boy should be expected to have learned logic before beginning geometry, and I by no means argue that he should; but I would yet maintain that nothing could be easier than to give boys along with instruction in grammar all the knowledge of logical principles that is necessary as a preparation for their instruction in geometry. For this, doubtless, it would be necessary that teachers of grammar should have learned logic, but that is not a very extravagant requirement. EDITOR.

XII.—NEW BOOKS.*

Fragments on Ethical Subjects, by the late GEORGE GROTE, Murray.

FROM the large accumulation of manuscripts left by Mr. Grote, it has been possible to rescue some interesting fragments, partly didactic and partly historical, bearing upon Ethics. These are now collected into a volume, and arranged into six separate Essays.

Four of the Essays are occupied with the more usual questions discussed in modern times in connection with Ethics—the nature of Conscience and the Standard of Morals. To the first of the two—the nature and mental origin of the Moral Sentiment or Conscience—the greatest part of these four Essays is devoted.

Mr. Grote's positions are much the same as those taken by Utilitarians generally. He disputes the instinctive origin of the moral sentiment, endeavouring to show how it can be otherwise accounted for. He disputes the personal or individual nature of conscience, alleging that it has neither meaning nor existence except with reference to society. On the same ground he lays great stress on the correlation of Obligation and Right; the ethical sentiment, he says, is a sentiment of *regulated social reciprocity* as between the agent and the society wherein he lives.

"With regard to the way in which ethical sentiment was first generated, on the original coalescence of rude men into a permanent social communion, we have no direct observation to consult, and must therefore content ourselves with assigning some unexceptionable theory. But with regard to the way in which ethical sentiment is sustained and transmitted, in a society once established, we have ample experience and opportunity for observing before our eyes. We know perfectly that children are not born with any ethical sentiment: they acquire it in the course of early education, and we

* See p. 6 above.—ED.

can trace the various stages of the process from its earliest rudiments to its complete maturity."

"You may call it a natural sentiment if you will—meaning thereby a sentiment which is formed by association, but which is quite certain to be formed more or less in every variety of human society. The foundations of the sentiment are doubtless laid in human nature; but the sentiment itself is composed of ideas and feelings gradually, and at last indissolubly, united together; the causes which determine such ideas and feelings to become associated together, being quite universal in their operation, and acting upon every individual (with certain modifications and varieties) who is brought up in anything like an established form of social relations."

He accordingly traces what he considers to be the course of the sentiment in the child, first, under self-regarding motives, and next, with the addition of sympathy; and shows it finally as naturalised in the mature mind. He sets forth with great force of illustration the sway of society over the mind of the individual—the influence of commendation on the one hand, and of reproach on the other.

"To be reproached with weakness, impotence, unfitness for the duties incumbent upon a man, ignorance of those accomplishments which are common with men of good condition, want of virile power, bastardy, ugliness, infamy of one's family, is an imputation quite as terrible and cutting as that of any ethical fault, such as dishonesty, mendacity, injustice, cruelty or ingratitude. The reproach of Euryalus to Ulysses, that he is no ἀθλητής, nothing better than a ship-master, is more warmly resented than almost any other reproach in the poem."

"The genuine ethical motive is—the desire at all events of acquiring a right to the esteem of others, and if possible consistently with this, the desire of actually enjoying it—the desire of escaping conscious liability to the disesteem of others, and if possible consistently with this, the desire of escaping their actual disesteem. To a perfectly virtuous man, the consciousness that he deserves esteem will be more gratifying than the actual enjoyment of it—the consciousness of deserving disesteem will be more painful than the actual suffering of it—if he is reduced to choose between the two."

"Moralists often speak of the sentiment of ethical obligation as if it stood alone and unconnected with any sentiment of right. Looking at the matter with reference to practice, one can easily understand why they have done this; for every man is certain to set quite sufficient value on his own rights, but he is not equally certain to be sufficiently attentive to his obligations. But it is nevertheless an error to suppose that the sense of obligation stands alone; for the sense of right is indissolubly connected with it, and forms an equally essential part of the ethical man."

"When I say that obligation and right are correlative and mutually imply each other, I do not mean that every specific act which we perform, under a sense of obligation, must necessarily correspond to a specific right vested in some other determinate persons. In performing any obligatory act, the sentiment by which we are

impelled is not one peculiar to that act alone, but common to that act along with a great many others; and it is that general sentiment of *ethical obligation* which correlates and is indissolubly conjoined with the general sentiment of *ethical right;* making up both together, when joined by the ideal vinculum, called a *sanction*, what is properly called *ethical sentiment.*"

He grapples with the case where the individual is at variance with the surrounding public, or the recognised authority at the time. "The judgment of others, such as an individual actually sees or hears it pronounced upon himself or upon his own conduct, very often differs seriously from the judgment of others as he conceives it. What is called his *own judgment of himself*, is the idea which he forms of the judgment of others as it would be if they possessed the same fulness of knowledge, and contemplated the matter with the same intensity of interest, as he does himself."

"This appeal to the ideal spectators, thoroughly well-informed and enlightened, is what constitutes the sense of *good or ill desert*, or merit and demerit. That estimation which I suppose myself to deserve, and that estimation which I suppose that a right-minded and well-informed spectator would accord to me—are only two modes of expressing the same thing. If the actual spectators around do not accord me this estimation, I regard them either as not right-minded or as not well-informed—I constitute myself their censor, instead of recognising them as mine."

The two concluding essays are on the Ethics and the Politics of Aristotle. As regards the Ethics, there is a very full discussion of two capital points, namely, Happiness, and what, according to Aristotle, is the chief ingredient of Happiness — Virtue. Mr. Grote comes face to face with his author in every possible phase of the theory of Happiness; and it is a curious spectacle to see Aristotle in the hands of a modern Utilitarian of the most advanced type. Doing full justice to the merits of Aristotle's conceptions, he exposes its defects with his characteristic vigour of polemic.

No less subtle and clear is his handling of Aristotle's doctrine of virtue. He is also full on the distinction of the Voluntary and the Involuntary. As to the virtues in detail, the chief stress of the exposition is laid on Justice and Equity.

The last essay on the Politics of Aristotle, short as it is, is the gem of the collection. It displays the author in his happiest vein. Placing himself exactly at the point of view of the work he is describing, he is in full sympathy with the end that Aristotle had in view; he examines critically the means proposed for that end, and shows the bearing of Aristotle's ideal upon actual societies.

"Oligarchical reasoners in modern times employ the bad part of Aristotle's principle without the good. They represent the rich and great as alone capable of reaching a degree of virtue consistent with the full enjoyment of political privileges: but then they take no precautions, as Aristotle does, that the men so preferred shall really answer to this exalted character. They leave the rich and

great to their own self-indulgence and indolent propensities, without training them by any systematic process to habits of superior virtue. So that the select citizens on this plan are at the least no better, if indeed they are not worse, than the remaining community, while their unbounded indulgences excite either undue envy or undue admiration, among the excluded multitude. The select citizens of Aristotle are both better and wiser than the rest of their community: while they are at the same time so hemmed in and circumscribed by severe regulations, that nothing except the perfection of their character can appear worthy either of envy or admiration. Though therefore these oligarchical reasoners concur with Aristotle in sacrificing the bulk of the community to the pre-eminence of a narrow class, they fail of accomplishing the end for which alone he pretends to justify such a sacrifice—the formation of a few citizens of complete and unrivalled virtue."

Considering that these were the two treatises of Aristotle that Mr. Grote was considered as most especially qualified to deal with, it is in some degree consoling to find that, while he unfortunately failed to reach them in the regular course of his exposition, he has not altogether left himself without a witness on several of the more vital themes. A. Bain.

Beiträge zur Psychologie als Wissenschaft aus Speculation und Erfahrung, von Dr. Karl Fortlage. Leipzig, 1875.

In 1855, the author published a *System der Psychologie*, in which the attempt was made to bring the psychological analysis of Beneke into relation with the abstract metaphysics of Kant and Fichte. The present work is conceived in the same spirit. The author re-affirms his adhesion to the "pure and unmixed Idealism" of Fichte, while making full use of the light shed upon the science of mind by recent researches in physics and biology. After preliminary remarks on the place of Psychology among the sciences, the author traces the rise of consciousness in the human soul; and then examines in detail the sensations of Hearing, as affording (when the physiological processes are taken into account) typical illustrations of the mind's converse with the outer world. A consideration of Space and Time forms the natural transition to the strictly metaphysical portion of the book—a prolonged discussion on the relation of the individual to the totality of Being. The author confidently predicts at no distant day a "brilliant renascence for the *Natur-Philosophie* of Schelling and the *Wissenschaftslehre* of Fichte."

Lehrbuch der Psychologie vom Standpunkte des Realismus und nach genetischer Methode, von Dr. Wilhelm Volkmann Ritter von Volkmar. 2 Bde. Cöthen, 1875-6.

The author's *Grundriss* (1856), expanded into a complete treatise of Psychology. The work is historical as well as dogmatic, considerable attention being paid to the views of English writers.

The Emotions and the Will, by ALEXANDER BAIN, LL.D. 3rd Edition, Longmans & Co., 1875.

The present edition has been thoroughly revised, and in great part rewritten. The chapters on the leading Emotions, on Ideal Emotions, on Sympathy, and on Aesthetic Emotions (in respect of which last the author has largely profited by the investigations of Mr. James Sully), also the chapter on Belief, appear in a new form. Additions have been made to the handling of Desire, Free-will (in view of Mr. Sidgwick's position), and Consciousness. Part of the introductory chapter is devoted to a consideration of the question how far there can be a quantitative treatment of Feeling. The author also fully discusses the bearing of the Evolution hypothesis on the Emotions, and, as regards the Will, maintains that his leading assumptions (which are well-known) are equally required under that hypothesis.

The Economy of Thought, by T. HUGHES. London: Hodder and Stoughton, 1875.

This book is intended to enlighten, at the same time, the student and the ordinary reader. Hence, perhaps, it is that the author seeks to embrace, within the compass of a small volume, such extensive subjects as Logic, Ethics, Psychology, and Religious Philosophy. The transitions of the author's "thought" are not always quite obvious. In Logic, which is intended to form the main topic, the subjectively-formal point of view is adopted.

Gott und die Natur, von Dr. HERMANN ULRICI. 3te neu bearbeitete Auflage. Leipzig, 1875.

In this edition, as in the preceding one, the author has endeavoured to estimate the result of recent scientific inquiry; a task rendered unusually difficult by the differences of opinion of scientific men on many points of fundamental importance. These disputes touch ultimately upon the ground-problem of all science, the notion of Being—the old controversy whether Being and Matter are identical. Here the philosopher is entitled to a hearing on his own account; and the author declares himself emphatically against the growing "monistic" tendency of the students of Nature. He cannot allow that Monism explains phenomena better than Dualism. He is a hostile critic of the hypothesis of Evolution; but, both on that subject and also on Pessimism, is concerned rather with the practical consequences (real or supposed), than with the theoretical aspects, of the doctrines brought under review.

Kant und Darwin. Ein Beitrag zur Geschichte der Entwichlungslehre, von FRITZ SCHULTZE. Jena, 1875.

An attempt to display the germs of the modern theory of Development in the speculation of Kant. The author has collected all the passages bearing on the subject. He thinks that men of science have been great losers by neglecting the study of Kant, and declares that they have much still to learn from the "greatest philosopher" of Germany.

Versuch einer Entwicklungsgeschichte der Kantischen Erkenntnisstheorie, von Dr. FRIEDRICH PAULSEN. Leipzig, 1875.

The author adopts, as the starting-point for his own investigation, the view of K. Fischer, that, between the dogmatic and critical stages of Kant's mental history, a "period of transition" should be recognised, when the philosopher of Königsberg found himself in agreement with the Scepticism of Hume; and he tries to link these periods more closely together. If Kant in the period immediately antecedent to the working-out of his critical system inclined to the stand-point of Hume, it is reasonable to suppose that the *Kritik der reinen Vernunft* would strikingly exhibit the transition. The *Kritik* must have, as essential content, a proposition which maintains the precise opposite of the dogma of Hume's Empiricism. Now, as the dogma of Hume consisted in the (to the view of Kant) negative assertion that a certain kind of knowledge is impossible, the main thesis of the *Kritik* must be positive. Such a negative proposition, as that we cannot know Things-in-themselves, is accordingly excluded. The author seeks to show that the needed principle is not the limitation of the human view to phenomena, but the assertion of the possibility of *à priori* or rational knowledge of objects. While the treatise is mainly historical, the author is not without hope that some light may be thrown on the question of the Origin of Knowledge itself. Although the language of the controversy has changed, the substance of the controversy remains. Is there knowledge of matters of fact (*Thatsachen*) through pure reason? Kant professed to adjudicate between contending schools, but really took part with the rationalists. His attempt to reach a position superior both to Rationalism and Empiricism was a failure, as the author believes similar attempts will always prove to be. The question, as put by Hume, is the real and genuine problem of knowledge.

Grenzen der Philosophie, constatirt gegen Riemann und Helmholtz, vertheidigt gegen von Hartmann und Lasker, von WILHELM TOBIAS. Berlin, 1875.

In this large polemical work the author discusses a number of subjects which appear to him to lie near the boundary line between science and philosophy, and which are therefore likely, from a misapprehension of their true nature, to render this boundary indistinct. Among the principal themes enlarged on are the rational possibility of a space of more than three dimensions, as conceived by Riemann and Helmholtz; the controversy between the "empiricists" and the "nativists," with respect to the origin of space-notions; the attempt of von Hartmann to arrive at a metaphysical principle by "the inductive methods of natural science," and finally a number of problems connected with art, ethics and politics, suggested by a work of Eduard Lasker (*Ueber Welt- und Staats-weisheit*). The author contends for a philosophical solution of certain questions as a necessary complement to the constructions of the sciences (that is a distinct meta-physic), which he commonly defines in Kantian terms as a determination of the nature of knowledge

(*Erkenntnisstheorie*), but which, in other places, he makes to include all departments of subjective knowledge (psychology).

Die philosophischen Schriften von Gottfried Wilhelm Leibniz. Herausgegeben von G. J. GERHARDT. Bd. I. Berlin, 1875.

This new edition of the philosophical writings of Leibniz will contain all that has been printed hitherto, together with whatever of value may not have seen the light, which the editor is able to procure or discover. In the arrangement of the collection, the entire correspondence will precede the regular treatises. The present volume contains the letters which passed between Leibniz and Thomasius, Otto von Guericke, Spinoza, Conring, Eckhard, Molanus, Malebranche, Foucher; letters to Duke Johann Friedrich; a long letter (undated) to Arnauld; and two unanswered communications to Hobbes. The correspondence seems to be arranged, as far as possible, with a view to showing the course of Leibniz's speculation. Some matter, not strictly philosophical, is included, but generally for the sake of the metaphysical references. W. C. COUPLAND.

XIII.—NEWS.

Professor Wundt (who now holds the place of ordinary Professor of Philosophy in Leipzig, having been called thither from Zürich, where he has professed philosophy for the past year) will contribute to the next number of MIND an account, addressed to psychologists, of a new and original research on "Reflex Action and the Mechanics of Central Innervation."

Simultaneously with MIND, a French philosophical journal, very similar in its scope, begins to appear. The *Revue Philosophique de la France et de l'Etranger* (Germer Baillière) will be issued henceforth on the first of every month, under the direction of M. Th. Ribot, well-known in this country by his *Psychologie Anglaise* and other works.

Professor F. A. Lange, of Marburg, died on the 21st of November last. It was mentioned some months ago that his *Geschichte des Materialismus* was being translated into English. We should be glad to hear the statement confirmed.

Mr. Henry Sidgwick has recently been appointed Praelector of Moral and Political Philosophy in Trinity College, Cambridge. His lectures in this newly constituted post are open to the whole university.

Mr. James Ward has been elected to the first Fellowship in Trinity College, Cambridge, given for proficiency in the Moral Sciences only. The election was decided partly by an examination, partly upon dissertations which the candidates (4) were allowed about a year to write. Mr. Ward's subject was the "Relation of Psychology to Physiology."

Mr. Herbert Spencer's *First Principles*, translated into German in 1874 (by Dr. B. Vetter), has begun to receive attention from the critical journals. The writer of a discriminating notice in the *Literarisches Centralblatt* (28th August, 1875) makes one very curious remark. Observing that Mr. Spencer does not cite Hume, "the most important" of English thinkers, among the advocates of the relativity of human knowledge, he says the omission is not really to be wondered at, seeing that for well-known reasons it may still be "precarious" to mention Hume's name to English ears. So hard is it for one nation to know the truth about another!